TOKUHYO 2002-502260

FIG. 1

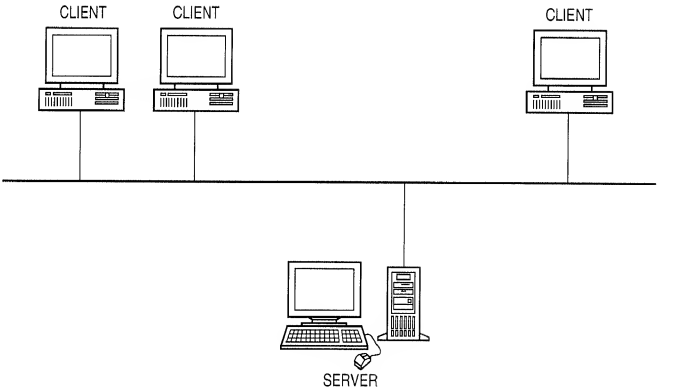

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FIG. 2

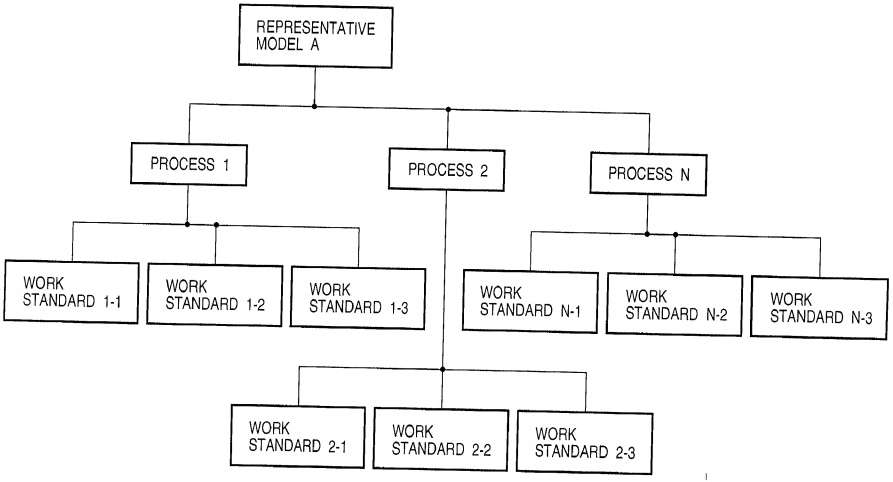


FIG. 3

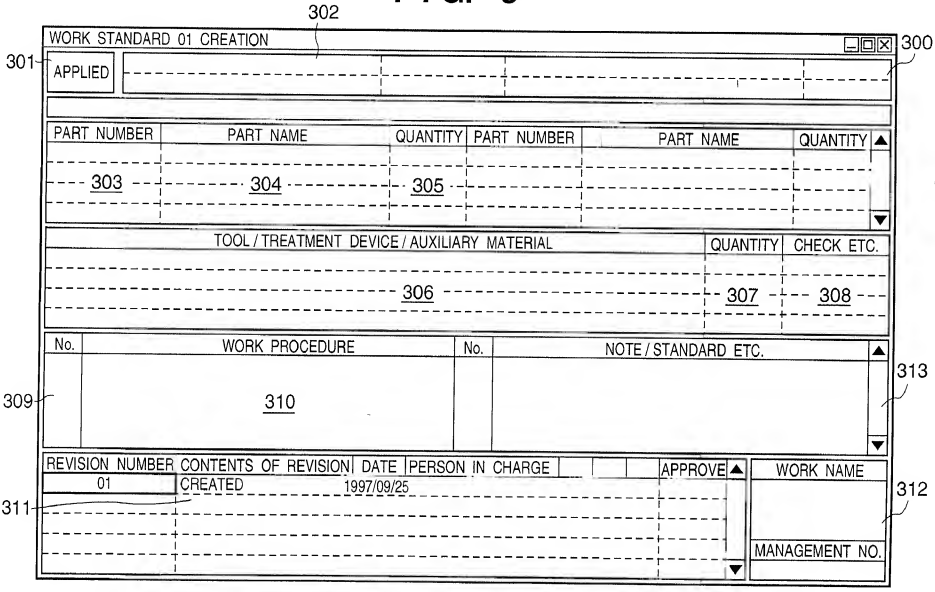

302
WORK STANDARD 01 CREATION
300
301
APPLIED
PART NUMBER
PART NAME
QUANTITY
PART NUMBER
PART NAME
QUANTITY
303
304
305
TOOL / TREATMENT DEVICE / AUXILIARY MATERIAL
QUANTITY
CHECK ETC.
306
307
308
No.
WORK PROCEDURE
No.
NOTE / STANDARD ETC.
309
310
313
REVISION NUMBER
CONTENTS OF REVISION
DATE
PERSON IN CHARGE
APPROVE
01
CREATED
1997/09/25
311
WORK NAME
312
MANAGEMENT NO.

FIG. 4

STRUCTURE OF MASTER FILE

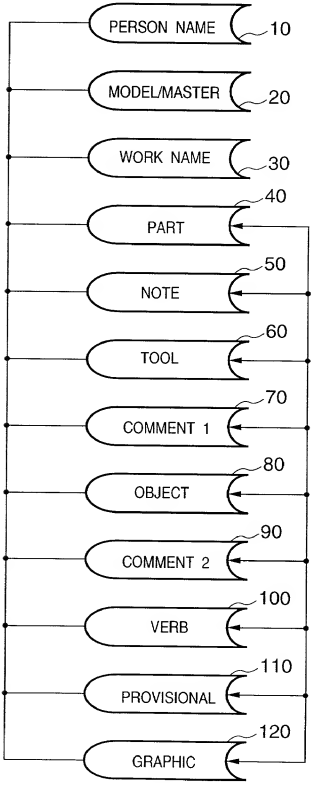


FIG. 5

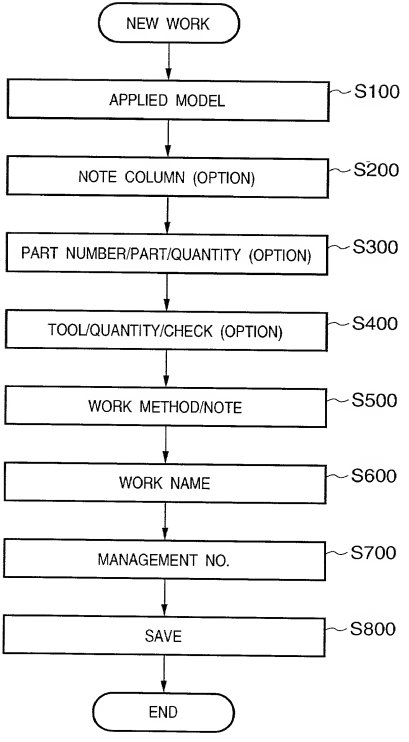

NEW WORK
APPLIED MODEL
S100
NOTE COLUMN (OPTION)
S200
PART NUMBER/PART/QUANTITY (OPTION)
S300
TOOL/QUANTITY/CHECK (OPTION)
S400
WORK METHOD/NOTE
S500
WORK NAME
S600
MANAGEMENT NO.
S700
SAVE
S800
END

FIG. 6

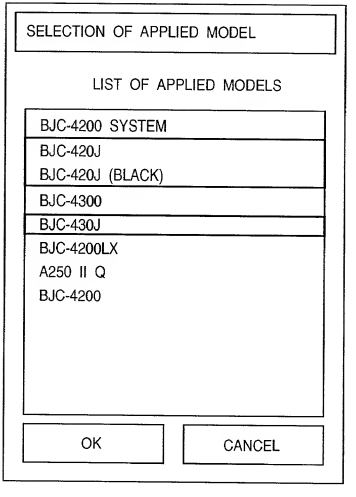

SELECTION OF APPLIED MODEL
LIST OF APPLIED MODELS
BJC-4200 SYSTEM
BJC-420J
BJC-420J (BLACK)
BJC-4300
BJC-430J
BJC-4200LX
A250 II Q
BJC-4200
OK
CANCEL

FIG. 7

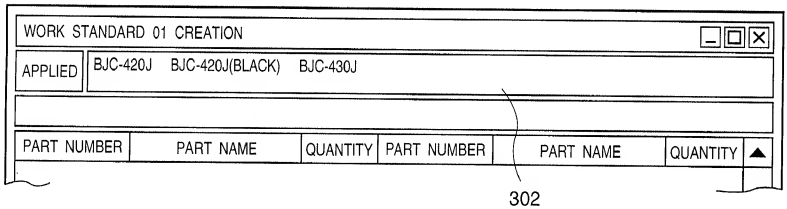

WORK STANDARD 01 CREATION
APPLIED
BJC-420J BJC-420J(BLACK) BJC-430J
PART NUMBER
PART NAME
QUANTITY
PART NUMBER
PART NAME
QUANTITY
302

FIG. 8

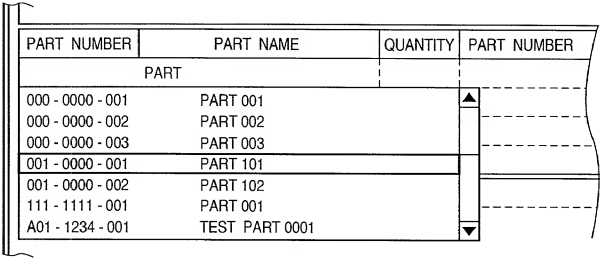

PART NUMBER
PART NAME
QUANTITY
PART NUMBER
PART
000 - 0000 - 001
PART 001
000 - 0000 - 002
PART 002
000 - 0000 - 003
PART 003
001 - 0000 - 001
PART 101
001 - 0000 - 002
PART 102
111 - 1111 - 001
PART 001
A01 - 1234 - 001
TEST PART 0001

FIG. 9

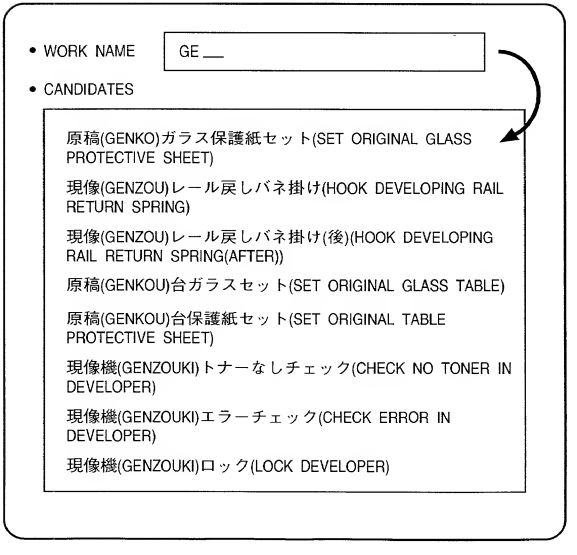

• WORK NAME
GE__
• CANDIDATES
原稿(GENKO)ガラス保護紙セット(SET ORIGINAL GLASS PROTECTIVE SHEET)
現像(GENZOU)レール戻しバネ掛け(HOOK DEVELOPING RAIL RETURN SPRING)
現像(GENZOU)レール戻しバネ掛け(後)(HOOK DEVELOPING RAIL RETURN SPRING(AFTER))
原稿(GENKOU)台ガラスセット(SET ORIGINAL GLASS TABLE)
原稿(GENKOU)台保護紙セット(SET ORIGINAL TABLE PROTECTIVE SHEET)
現像機(GENZOUKI)トナーなしチェック(CHECK NO TONER IN DEVELOPER)
現像機(GENZOUKI)エラーチェック(CHECK ERROR IN DEVELOPER)
現像機(GENZOUKI)ロック(LOCK DEVELOPER)

FIG. 10

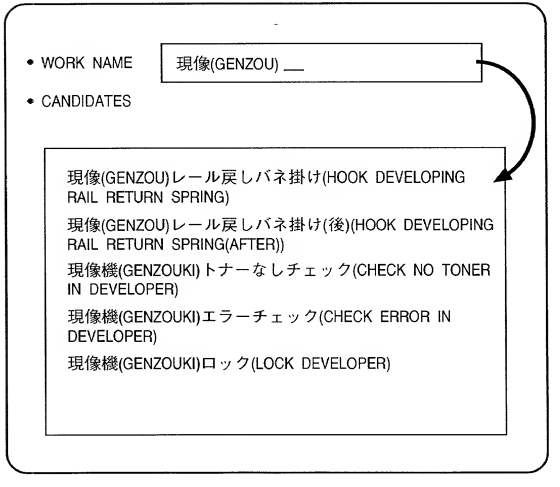

• WORK NAME
現像(GENZOU) __
• CANDIDATES
現像(GENZOU)レール戻しバネ掛け(HOOK DEVELOPING RAIL RETURN SPRING)
現像(GENZOU)レール戻しバネ掛け(後)(HOOK DEVELOPING RAIL RETURN SPRING(AFTER))
現像機(GENZOUKI)トナーなしチェック(CHECK NO TONER IN DEVELOPER)
現像機(GENZOUKI)エラーチェック(CHECK ERROR IN DEVELOPER)
現像機(GENZOUKI)ロック(LOCK DEVELOPER)

FIG. 11

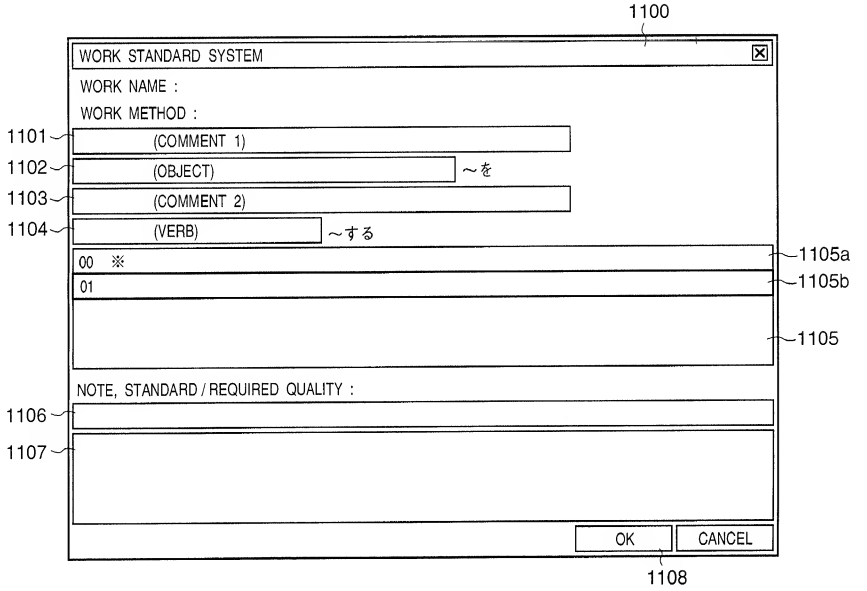

1100
WORK STANDARD SYSTEM
WORK NAME :
WORK METHOD :
1101
(COMMENT 1)
1102
(OBJECT)
～を
1103
(COMMENT 2)
1104
(VERB)
～する
00 ※
01
1105a
1105b
1105
NOTE, STANDARD / REQUIRED QUALITY :
1106
1107
OK
CANCEL
1108

FIG. 12

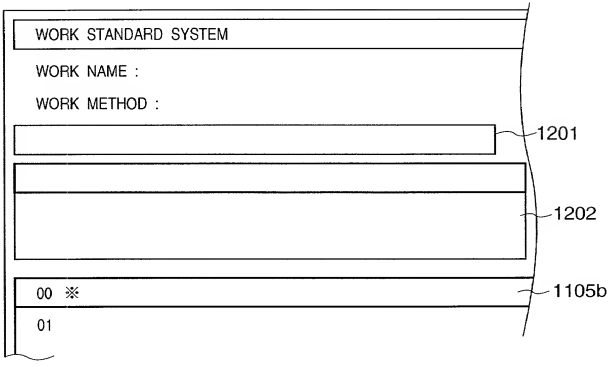

WORK STANDARD SYSTEM
WORK NAME :
WORK METHOD :
1201
1202
00 ※
01
1105b

FIG. 13

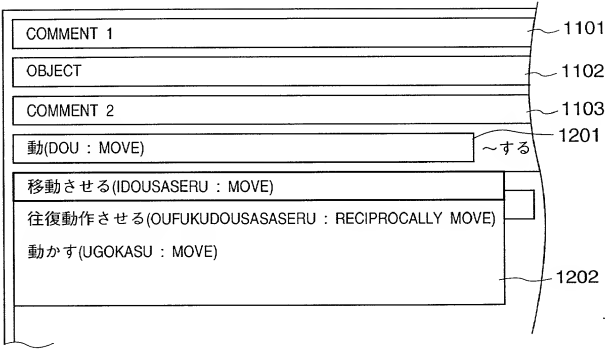

COMMENT 1
1101
OBJECT
1102
COMMENT 2
1103
動(DOU : MOVE)
～する
1201
移動させる(IDOUSASERU : MOVE)
往復動作させる(OUFUKUDOUSASASERU : RECIPROCALLY MOVE)
動かす(UGOKASU : MOVE)
1202

FIG. 14

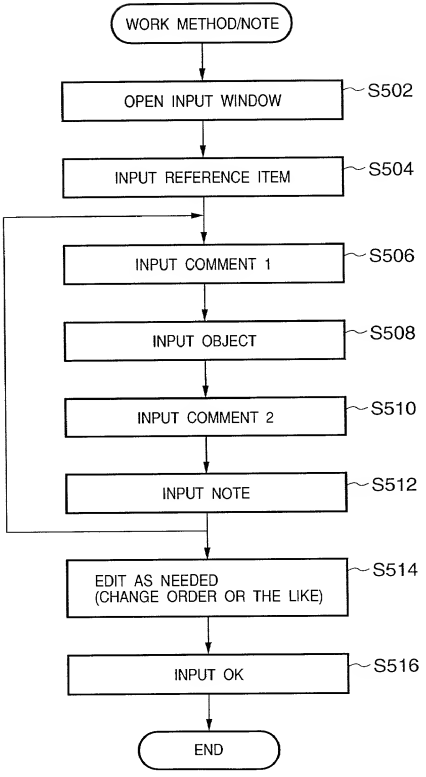

WORK METHOD/NOTE
OPEN INPUT WINDOW
S502
INPUT REFERENCE ITEM
S504
INPUT COMMENT 1
S506
INPUT OBJECT
S508
INPUT COMMENT 2
S510
INPUT NOTE
S512
EDIT AS NEEDED
(CHANGE ORDER OR THE LIKE)
S514
INPUT OK
S516
END

FIG. 15

00	※	
01	DO zzzz SUCH THAT xxxx AT wwww POSITION BECOMES yyyy	
02	WIND AV CORD	
03	CONFIRM 100V SYSTEM	
04	SET CRG HOLDER	

FIG. 16

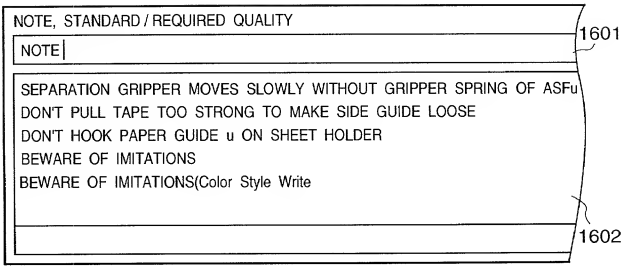

NOTE, STANDARD / REQUIRED QUALITY
NOTE
SEPARATION GRIPPER MOVES SLOWLY WITHOUT GRIPPER SPRING OF ASFu
DON'T PULL TAPE TOO STRONG TO MAKE SIDE GUIDE LOOSE
DON'T HOOK PAPER GUIDE u ON SHEET HOLDER
BEWARE OF IMITATIONS
BEWARE OF IMITATIONS(Color Style Write
1601
1602

FIG. 17

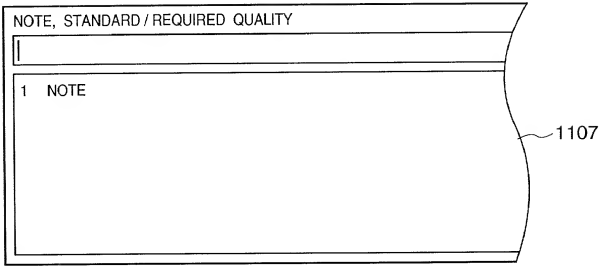


FIG. 18

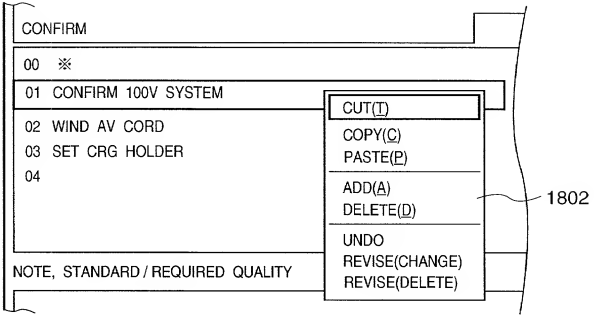

CONFIRM
00 ※
01 CONFIRM 100V SYSTEM
02 WIND AV CORD
03 SET CRG HOLDER
04
NOTE, STANDARD / REQUIRED QUALITY
CUT(T)
COPY(C)
PASTE(P)
ADD(A)
DELETE(D)
UNDO
REVISE(CHANGE)
REVISE(DELETE)
1802

FIG. 19

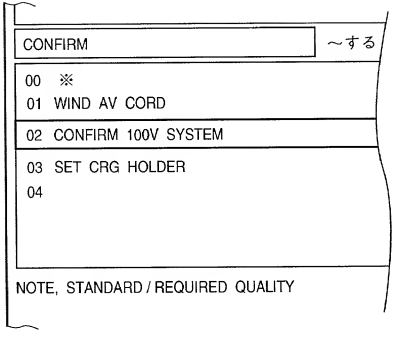

CONFIRM
～する
00 ※
01 WIND AV CORD
02 CONFIRM 100V SYSTEM
03 SET CRG HOLDER
04
NOTE, STANDARD / REQUIRED QUALITY

FIG. 20

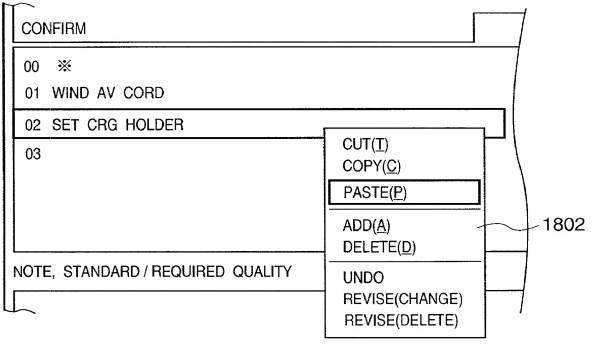

CONFIRM
00 ※
01 WIND AV CORD
02 SET CRG HOLDER
03
NOTE, STANDARD / REQUIRED QUALITY
CUT(T)
COPY(C)
PASTE(P)
ADD(A)
DELETE(D)
UNDO
REVISE(CHANGE)
REVISE(DELETE)
1802

FIG. 21

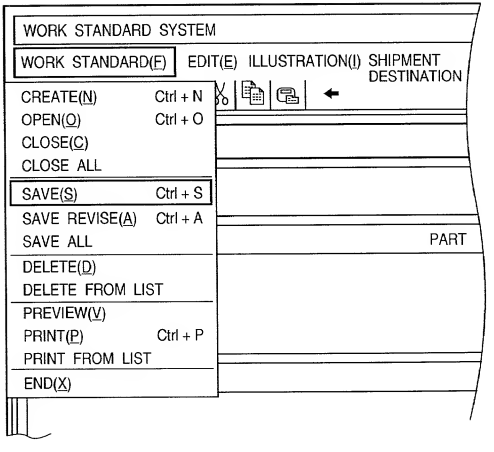

WORK STANDARD SYSTEM
WORK STANDARD(F)
EDIT(E)
ILLUSTRATION(I)
SHIPMENT DESTINATION
CREATE(N) Ctrl + N
OPEN(O) Ctrl + O
CLOSE(C)
CLOSE ALL
SAVE(S) Ctrl + S
SAVE REVISE(A) Ctrl + A
SAVE ALL
DELETE(D)
DELETE FROM LIST
PREVIEW(V)
PRINT(P) Ctrl + P
PRINT FROM LIST
END(X)
PART

FIG. 22

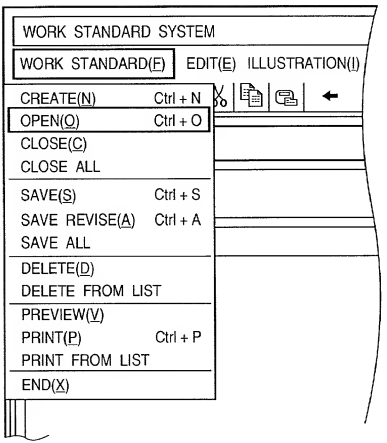
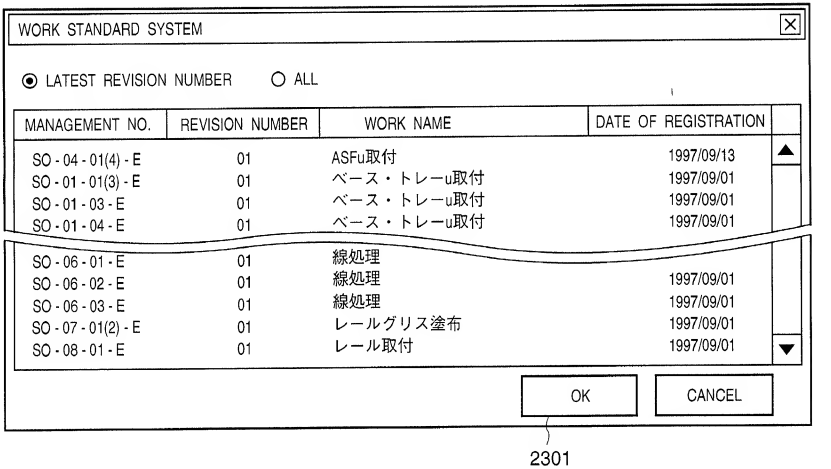

WORK STANDARD SYSTEM
WORK STANDARD(F)
EDIT(E)
ILLUSTRATION(I)
CREATE(N) Ctrl + N
OPEN(O) Ctrl + O
CLOSE(C)
CLOSE ALL
SAVE(S) Ctrl + S
SAVE REVISE(A) Ctrl + A
SAVE ALL
DELETE(D)
DELETE FROM LIST
PREVIEW(V)
PRINT(P) Ctrl + P
PRINT FROM LIST
END(X)

FIG. 23


WORK STANDARD SYSTEM
LATEST REVISION NUMBER
ALL
MANAGEMENT NO.
REVISION NUMBER
WORK NAME
DATE OF REGISTRATION
SO - 04 - 01(4) - E 01 ASFu取付 1997/09/13
SO - 01 - 01(3) - E 01 ベース・トレーu取付 1997/09/01
SO - 01 - 03 - E 01 ベース・トレーu取付 1997/09/01
SO - 01 - 04 - E 01 ベース・トレーu取付 1997/09/01
SO - 06 - 01 - E 01 線処理
SO - 06 - 02 - E 01 線処理 1997/09/01
SO - 06 - 03 - E 01 線処理 1997/09/01
SO - 07 - 01(2) - E 01 レールグリス塗布 1997/09/01
SO - 08 - 01 - E 01 レール取付 1997/09/01
OK
CANCEL
2301

JP2004-252736A

FIG. 24

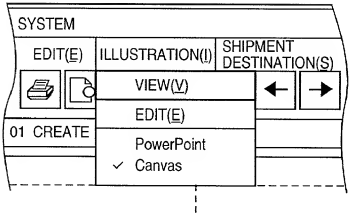


FIG. 25

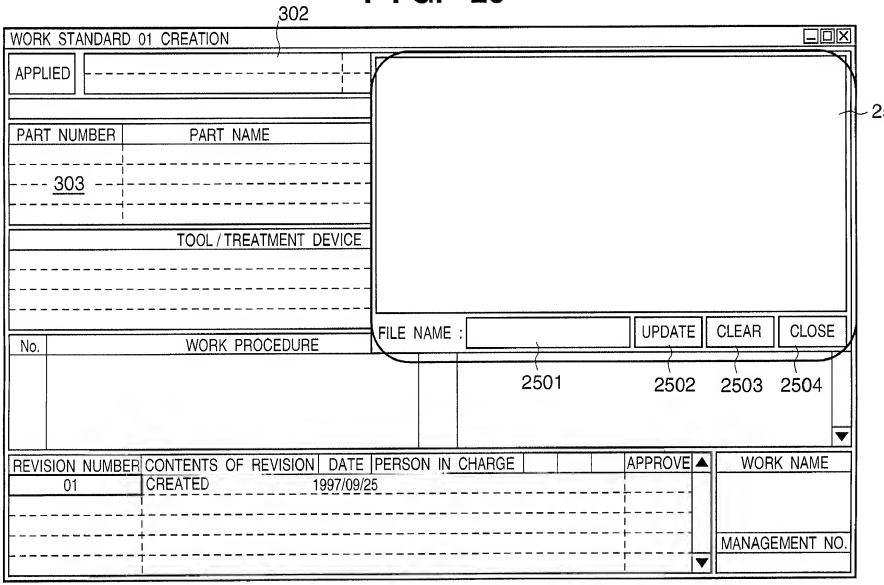

302
WORK STANDARD 01 CREATION
APPLIED
PART NUMBER
PART NAME
303
TOOL / TREATMENT DEVICE
No.
WORK PROCEDURE
2500
FILE NAME :
UPDATE
CLEAR
CLOSE
2501
2502
2503
2504
REVISION NUMBER
CONTENTS OF REVISION
DATE
PERSON IN CHARGE
APPROVE
01
CREATED
1997/09/25
WORK NAME
MANAGEMENT NO.

FIG. 26

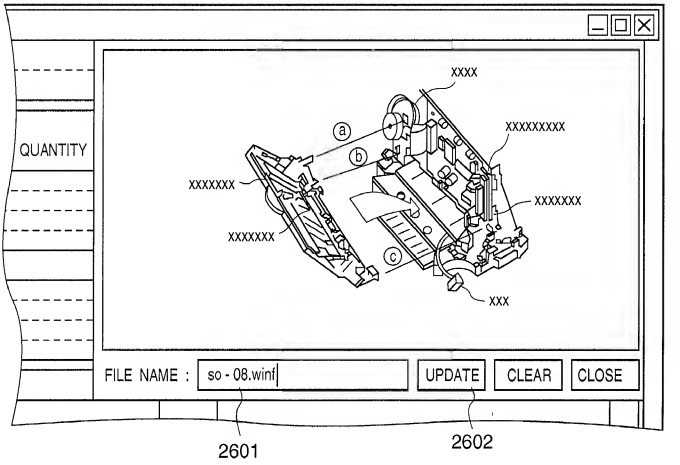
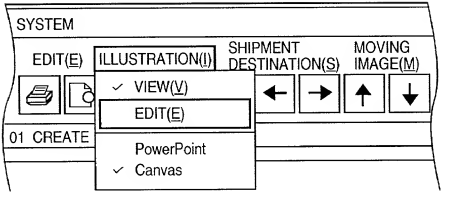

QUANTITY
XXXX
XXXXXXXXX
XXXXXXX
XXXXXXX
XXXXXXX
XXX
FILE NAME :
so - 08.winf
UPDATE
CLEAR
CLOSE
2601
2602

FIG. 27


SYSTEM
EDIT(E)
ILLUSTRATION(I)
SHIPMENT DESTINATION(S)
MOVING IMAGE(M)
✓ VIEW(V)
EDIT(E)
01 CREATE
PowerPoint
✓ Canvas

JP2011-253260

FIG. 28

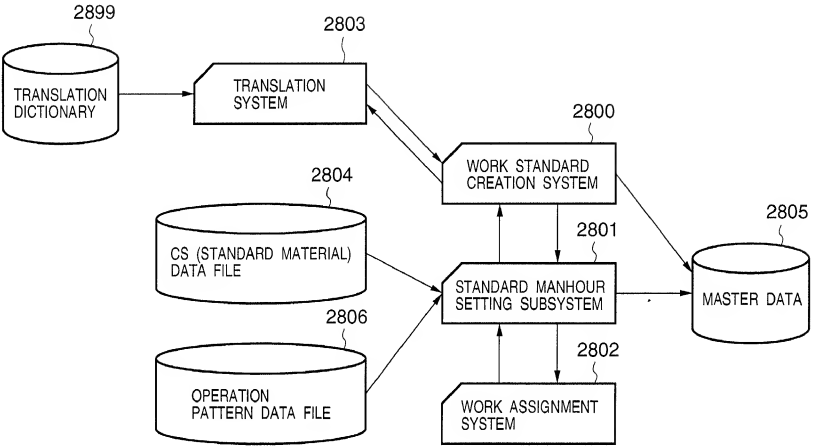


FIG. 29

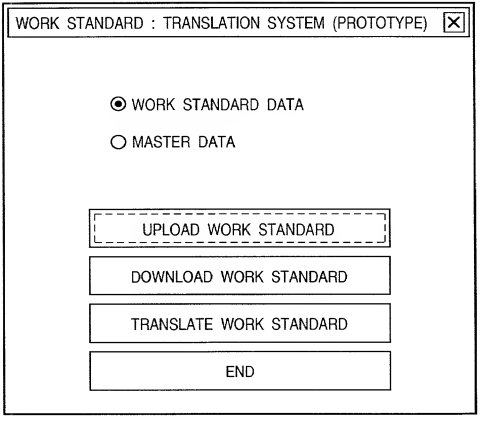

WORK STANDARD : TRANSLATION SYSTEM (PROTOTYPE)
WORK STANDARD DATA
MASTER DATA
UPLOAD WORK STANDARD
DOWNLOAD WORK STANDARD
TRANSLATE WORK STANDARD
END

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FIG. 30

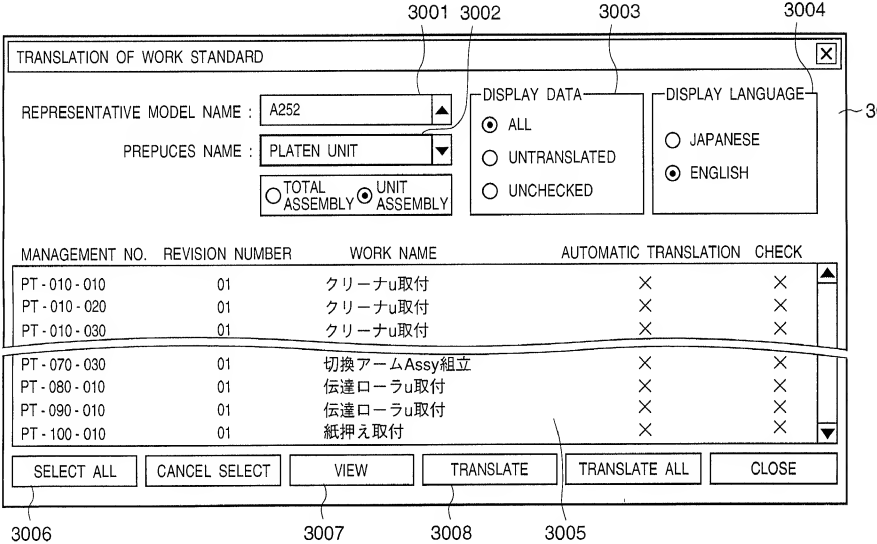


FIG. 31

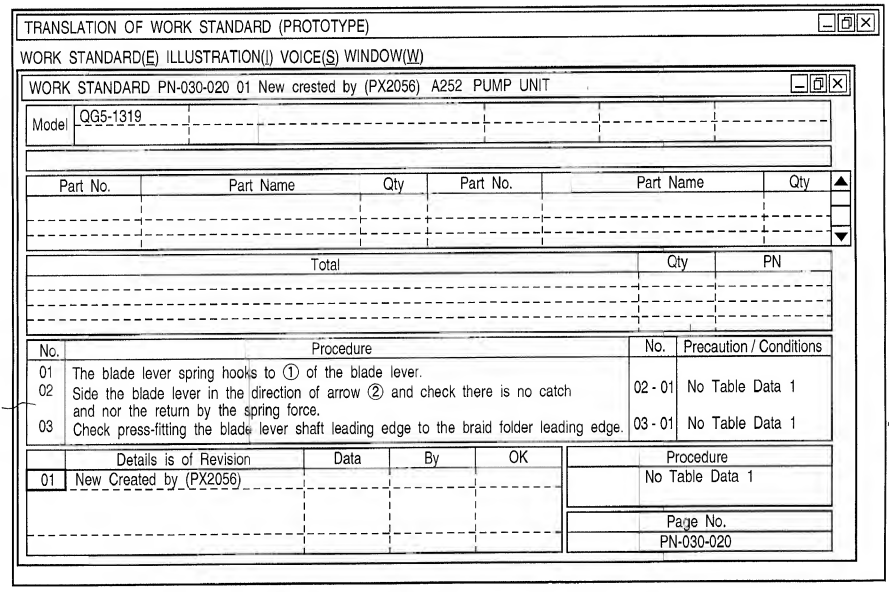
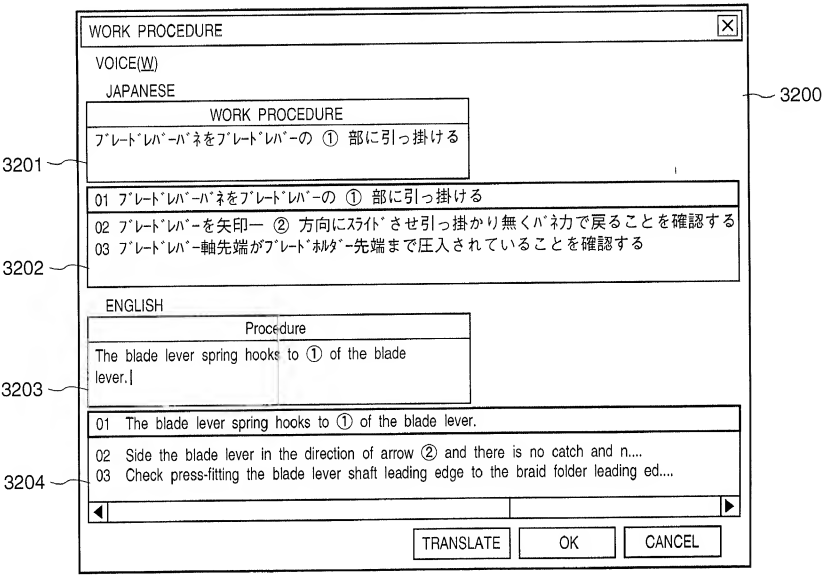

TRANSLATION OF WORK STANDARD (PROTOTYPE)
WORK STANDARD(E) ILLUSTRATION(I) VOICE(S) WINDOW(W)
WORK STANDARD PN-030-020 01 New crested by (PX2056) A252 PUMP UNIT
Model
QG5-1319
Part No.
Part Name
Qty
Part No.
Part Name
Qty
Total
Qty
PN
No.
Procedure
No.
Precaution / Conditions
01
The blade lever spring hooks to ① of the blade lever.
02
Side the blade lever in the direction of arrow ② and check there is no catch and nor the return by the spring force.
03
Check press-fitting the blade lever shaft leading edge to the braid folder leading edge.
02 - 01
No Table Data 1
03 - 01
No Table Data 1
3101
Details is of Revision
Data
By
OK
01
New Created by (PX2056)
Procedure
No Table Data 1
Page No.
PN-030-020

FIG. 32


WORK PROCEDURE
VOICE(W)
JAPANESE
WORK PROCEDURE
ﾌﾟﾚｰﾄﾞﾚﾊﾞｰﾊﾞﾈをﾌﾟﾚｰﾄﾞﾚﾊﾞｰの ① 部に引っ掛ける
01 ﾌﾟﾚｰﾄﾞﾚﾊﾞｰﾊﾞﾈをﾌﾟﾚｰﾄﾞﾚﾊﾞｰの ① 部に引っ掛ける
02 ﾌﾟﾚｰﾄﾞﾚﾊﾞｰを矢印一 ② 方向にｽﾗｲﾄﾞさせ引っ掛かり無くﾊﾞﾈ力で戻ることを確認する
03 ﾌﾟﾚｰﾄﾞﾚﾊﾞｰ軸先端がﾌﾟﾚｰﾄﾞﾎﾙﾀﾞｰ先端まで圧入されていることを確認する
ENGLISH
Procedure
The blade lever spring hooks to ① of the blade lever.
01 The blade lever spring hooks to ① of the blade lever.
02 Side the blade lever in the direction of arrow ② and there is no catch and n....
03 Check press-fitting the blade lever shaft leading edge to the braid folder leading ed....
TRANSLATE
OK
CANCEL
3200
3201
3202
3203
3204

JP2003-323560

FIG. 33

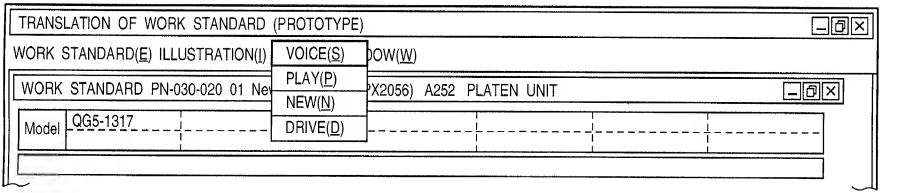


FIG. 34

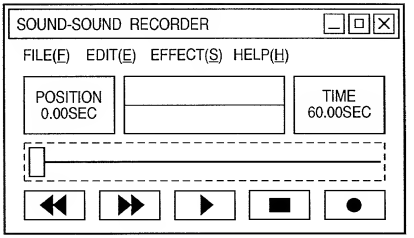

SOUND-SOUND RECORDER
FILE(F) EDIT(E) EFFECT(S) HELP(H)
POSITION
0.00SEC
TIME
60.00SEC

FIG. 35

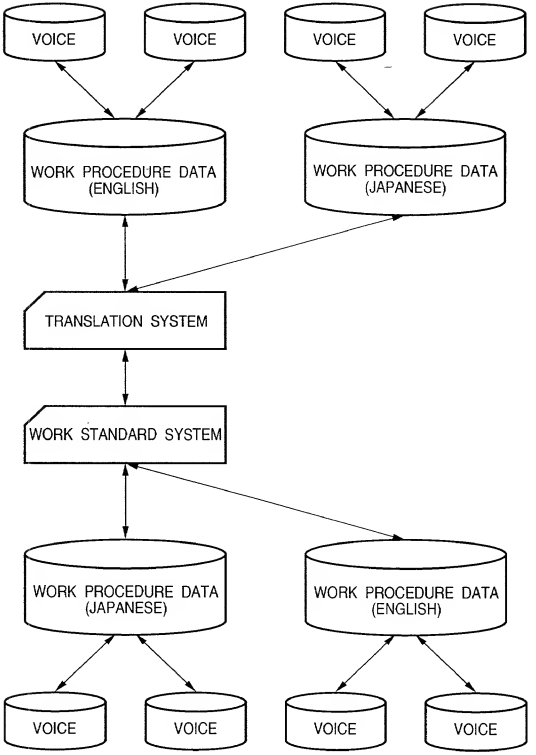

VOICE
VOICE
VOICE
VOICE
WORK PROCEDURE DATA (ENGLISH)
WORK PROCEDURE DATA (JAPANESE)
TRANSLATION SYSTEM
WORK STANDARD SYSTEM
WORK PROCEDURE DATA (JAPANESE)
WORK PROCEDURE DATA (ENGLISH)
VOICE
VOICE
VOICE
VOICE

FIG. 36

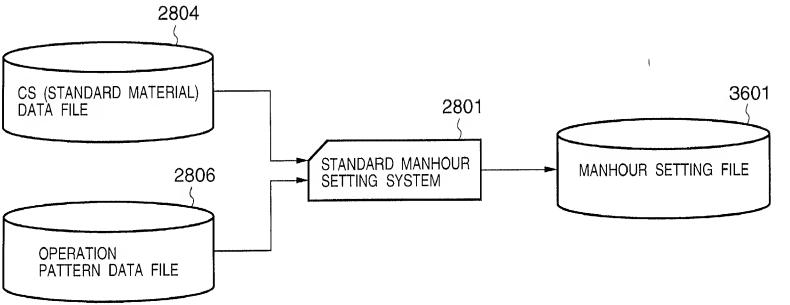

2804
CS (STANDARD MATERIAL) DATA FILE
2806
OPERATION PATTERN DATA FILE
2801
STANDARD MANHOUR SETTING SYSTEM
3601
MANHOUR SETTING FILE

FIG. 37

No.	ELEMENT WORK NAME	FREQUENCY		MANHOUR	CS	SET CONDITION

JP2010-237760

FIG. 38

STANDARD MATERIAL DATA

COMMENT 1	OBJECT	COMMENT 2	VERB	SET CONDITION DATA

FIG. 39

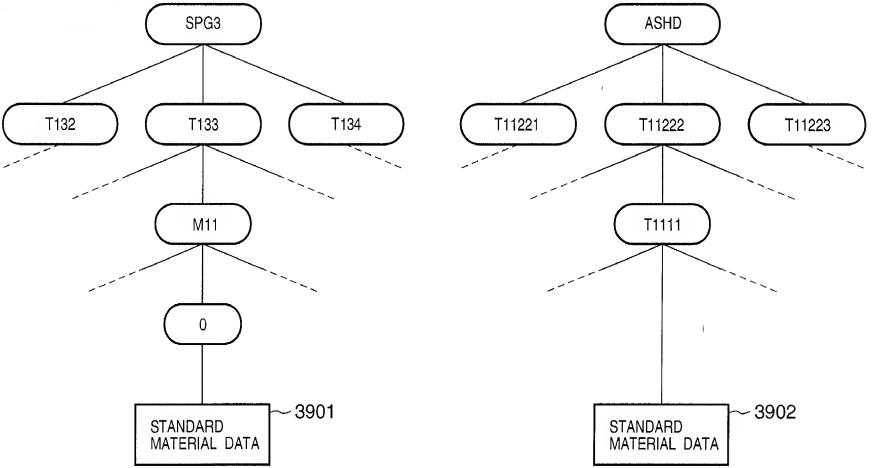

SPG3
T132
T133
T134
M11
0
STANDARD MATERIAL DATA
3901
ASHD
T11221
T11222
T11223
T1111
STANDARD MATERIAL DATA
3902

FIG. 40

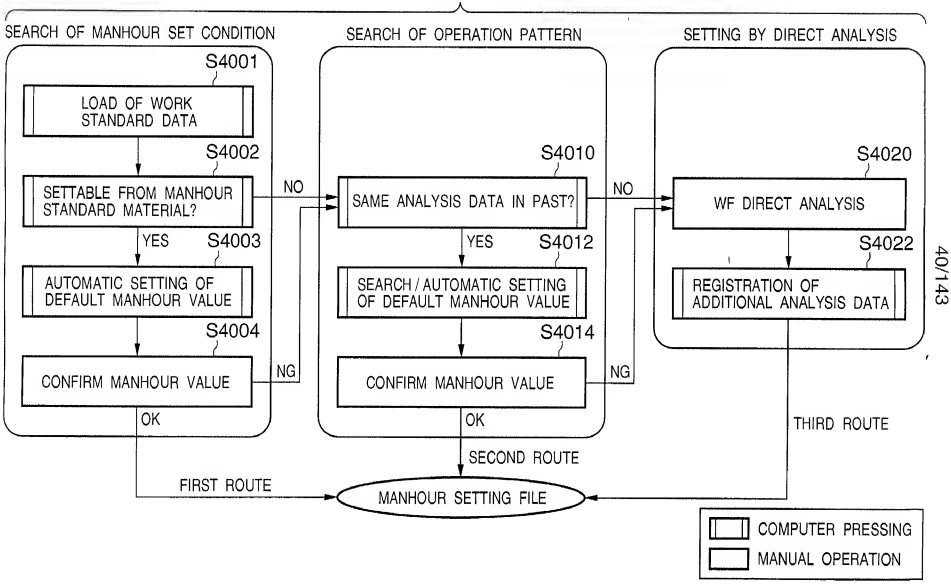

SEARCH OF MANHOUR SET CONDITION
SEARCH OF OPERATION PATTERN
SETTING BY DIRECT ANALYSIS
S4001
LOAD OF WORK STANDARD DATA
S4002
SETTABLE FROM MANHOUR STANDARD MATERIAL?
NO
YES
S4003
AUTOMATIC SETTING OF DEFAULT MANHOUR VALUE
S4004
CONFIRM MANHOUR VALUE
NG
OK
S4010
SAME ANALYSIS DATA IN PAST?
NO
YES
S4012
SEARCH / AUTOMATIC SETTING OF DEFAULT MANHOUR VALUE
S4014
CONFIRM MANHOUR VALUE
NG
OK
S4020
WF DIRECT ANALYSIS
S4022
REGISTRATION OF ADDITIONAL ANALYSIS DATA
THIRD ROUTE
SECOND ROUTE
FIRST ROUTE
MANHOUR SETTING FILE
COMPUTER PRESSING
MANUAL OPERATION

FIG. 41

3601

EDITING OF ELEMENT WORK

FILE(F) EDIT(E) VIEW(V) ANALYZE(A) ANALYSIS MATERIAL(B) CS(S) END(X)

UNIT WORK NAME : SEPARATION ROLLER ATTACHMENT

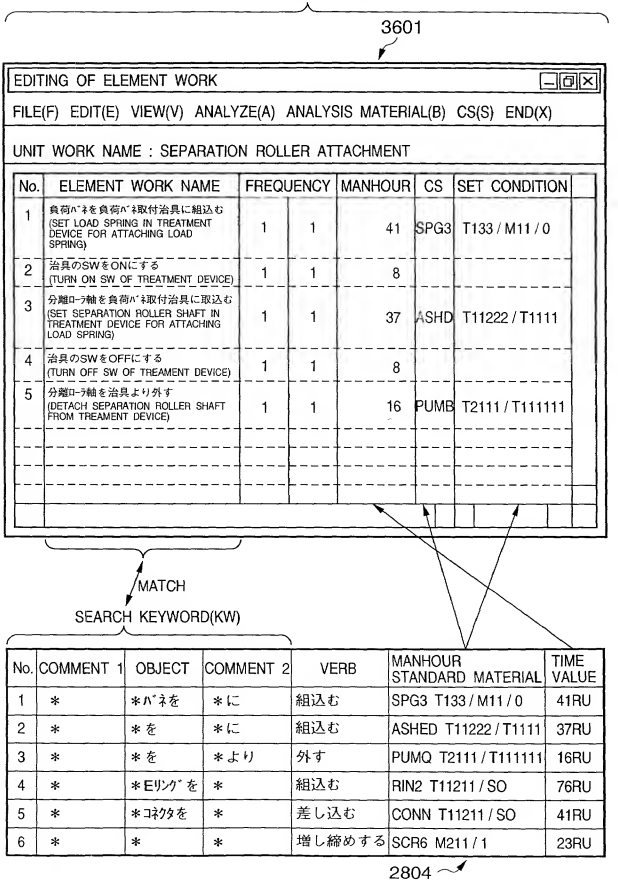
No.	ELEMENT WORK NAME	FREQUENCY		MANHOUR	CS	SET CONDITION
1	負荷ﾊﾞﾈを負荷ﾊﾞﾈ取付治具に組込む (SET LOAD SPRING IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING)	1	1			
2	治具のSWをONにする (TURN ON SW OF TREATMENT DEVICE)	1	1			
3	分離ﾛｰﾗ軸を負荷ﾊﾞﾈ取付治具に取込む (SET SEPARATION ROLLER SHAFT IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING)	1	1			
4	治具のSWをOFFにする (TURN OFF SW OF TREAMENT DEVICE)	1	1			
5	分離ﾛｰﾗ軸を治具より外す (DETACH SEPARATION ROLLER SHAFT FROM TREAMENT DEVICE)	1	1			

DATA LOAD

● ELEMENT WORK NAME

No.	COMMENT 1	OBJECT	COMMENT 2	VERB
1		負荷ﾊﾞﾈを	負荷ﾊﾞﾈ取付治具に	組込む
2	治具の	SWを		ONする
3		分離ﾛｰﾗ軸を	負荷ﾊﾞﾈ取付治具に	組込む
4	治具の	SWを		OFFにする
5		分離ﾛｰﾗ軸を	治具より	外す

FIG. 42



No.	COMMENT 1	OBJECT	COMMENT 2	VERB	MANHOUR STANDARD MATERIAL	TIME VALUE
1	*	*ﾊﾞﾈを	*に	組込む	SPG3 T133 / M11 / 0	41RU
2	*	*を	*に	組込む	ASHED T11222 / T1111	37RU
3	*	*を	*より	外す	PUMQ T2111 / T111111	16RU
4	*	*Eﾘﾝｸﾞを	*	組込む	RIN2 T11211 / SO	76RU
5	*	*ｺﾈｸﾀを	*	差し込む	CONN T11211 / SO	41RU
6	*	*	*	増し締めする	SCR6 M211 / 1	23RU

2804

FIG. 43

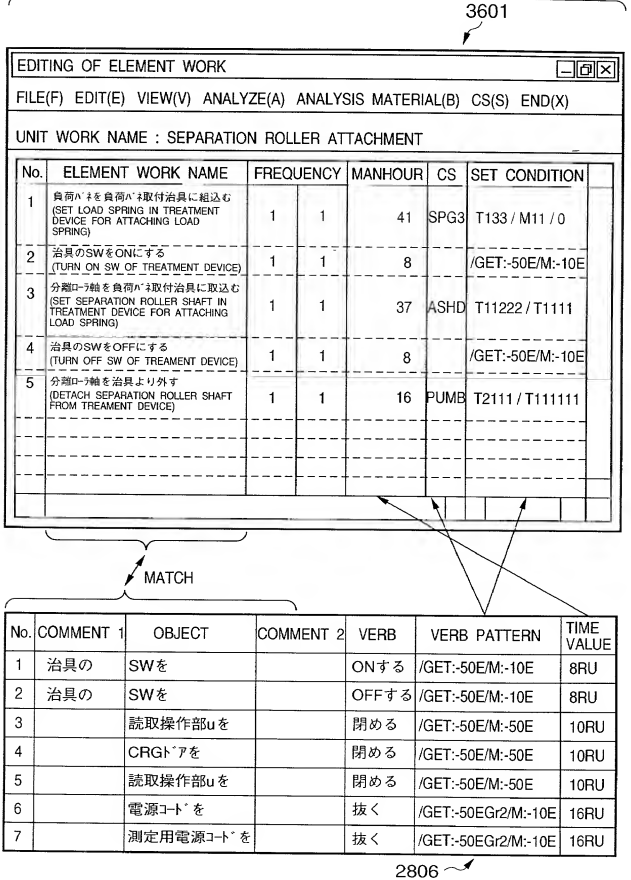

3601
EDITING OF ELEMENT WORK
FILE(F) EDIT(E) VIEW(V) ANALYZE(A) ANALYSIS MATERIAL(B) CS(S) END(X)
UNIT WORK NAME : SEPARATION ROLLER ATTACHMENT
No. | ELEMENT WORK NAME | FREQUENCY | | MANHOUR | CS | SET CONDITION
1 | 負荷ﾊﾞﾈを負荷ﾊﾞﾈ取付治具に組込む (SET LOAD SPRING IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING) | 1 | 1 | 41 | SPG3 | T133 / M11 / 0
2 | 治具のSWをONにする (TURN ON SW OF TREATMENT DEVICE) | 1 | 1 | 8 | | /GET:-50E/M:-10E
3 | 分離ﾛｰﾗ軸を負荷ﾊﾞﾈ取付治具に取込む (SET SEPARATION ROLLER SHAFT IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING) | 1 | 1 | 37 | ASHD | T11222 / T1111
4 | 治具のSWをOFFにする (TURN OFF SW OF TREAMENT DEVICE) | 1 | 1 | 8 | | /GET:-50E/M:-10E
5 | 分離ﾛｰﾗ軸を治具より外す (DETACH SEPARATION ROLLER SHAFT FROM TREAMENT DEVICE) | 1 | 1 | 16 | PUMB | T2111 / T111111
MATCH
No. | COMMENT 1 | OBJECT | COMMENT 2 | VERB | VERB PATTERN | TIME VALUE
1 | 治具の | SWを | | ONする | /GET:-50E/M:-10E | 8RU
2 | 治具の | SWを | | OFFする | /GET:-50E/M:-10E | 8RU
3 | | 読取操作部uを | | 閉める | /GET:-50E/M:-50E | 10RU
4 | | CRGﾄﾞｱを | | 閉める | /GET:-50E/M:-50E | 10RU
5 | | 読取操作部uを | | 閉める | /GET:-50E/M:-50E | 10RU
6 | | 電源ｺｰﾄﾞを | | 抜く | /GET:-50EGr2/M:-10E | 16RU
7 | | 測定用電源ｺｰﾄﾞを | | 抜く | /GET:-50EGr2/M:-10E | 16RU
2806

FIG. 44

3601

EDITING OF ELEMENT WORK

FILE(F) EDIT(E) VIEW(V) ANALYZE(A) ANALYSIS MATERIAL(B) CS(S) END(X)

UNIT WORK NAME : SEPARATION ROLLER ATTACHMENT

No.	ELEMENT WORK NAME	FREQUENCY		MANHOUR	CS	SET CONDITION
1	負荷ﾊﾞﾈを負荷ﾊﾞﾈ取付治具に組込む(SET LOAD SPRING IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING)	1	1	41	SPG3	T133 / M11 / 0
2	治具のSWをONにする(TURN ON SW OF TREATMENT DEVICE)	1	1	8		/GET:-50E/M:-10E
3	分離ﾛｰﾗ軸を負荷ﾊﾞﾈ取付治具に取込む(SET SEPARATION ROLLER SHAFT IN TREATMENT DEVICE FOR ATTACHING LOAD SPRING)	1	1	37	ASHD	T11222 / T1111
4	治具のSWをOFFにする(TURN OFF SW OF TREAMENT DEVICE)	1	1	8		/GET:-50E/M:-10E
5	分離ﾛｰﾗ軸を治具より外す(DETACH SEPARATION ROLLER SHAFT FROM TREAMENT DEVICE)	1	1	16	PUMB	T2111 / T111111

FIG. 45

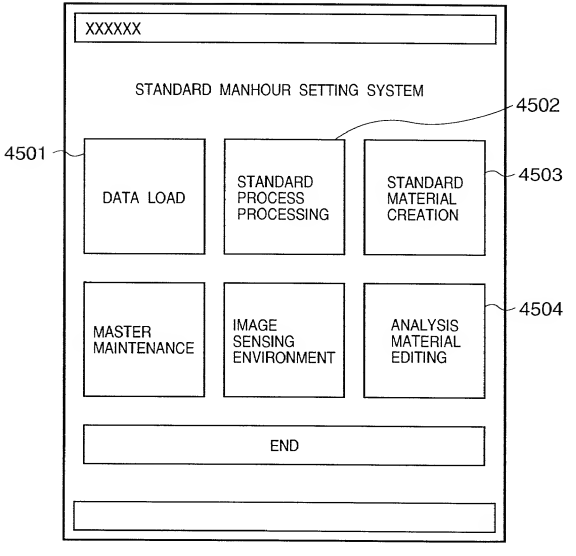
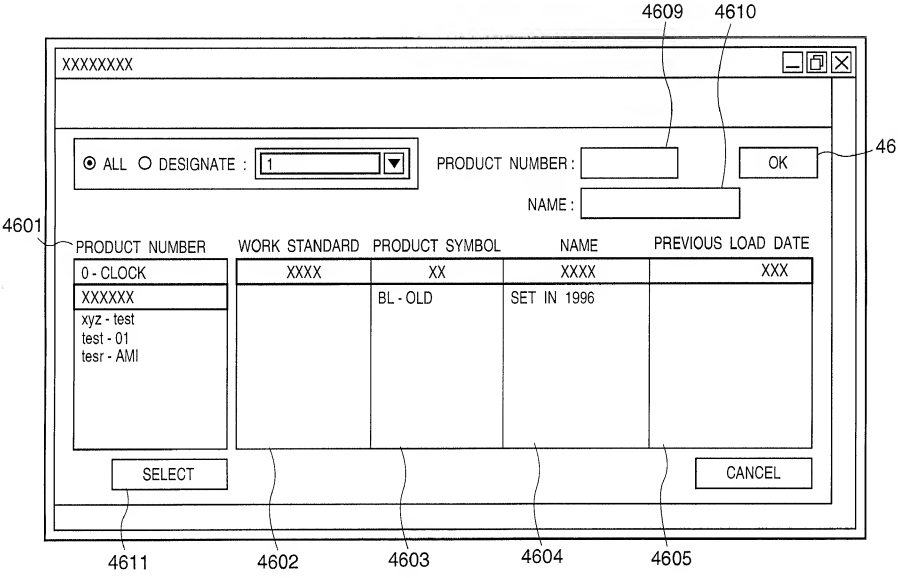

XXXXXX
STANDARD MANHOUR SETTING SYSTEM
4501
4502
4503
4504
DATA LOAD
STANDARD PROCESS PROCESSING
STANDARD MATERIAL CREATION
MASTER MAINTENANCE
IMAGE SENSING ENVIRONMENT
ANALYSIS MATERIAL EDITING
END

FIG. 46


4609
4610
XXXXXXXX
ALL
DESIGNATE :
1
PRODUCT NUMBER :
OK
4612
NAME :
4601
PRODUCT NUMBER
WORK STANDARD
PRODUCT SYMBOL
NAME
PREVIOUS LOAD DATE
0 - CLOCK
XXXX
XX
XXXX
XXX
XXXXXX
BL - OLD
SET IN 1996
xyz - test
test - 01
tesr - AMI
SELECT
CANCEL
4611
4602
4603
4604
4605

TOSHIBA-0245760

FIG. 47

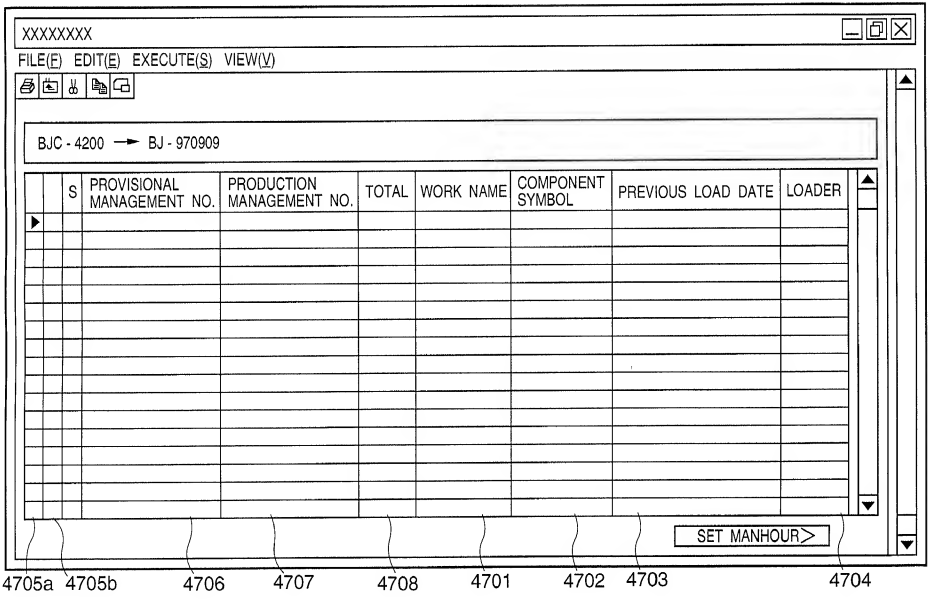
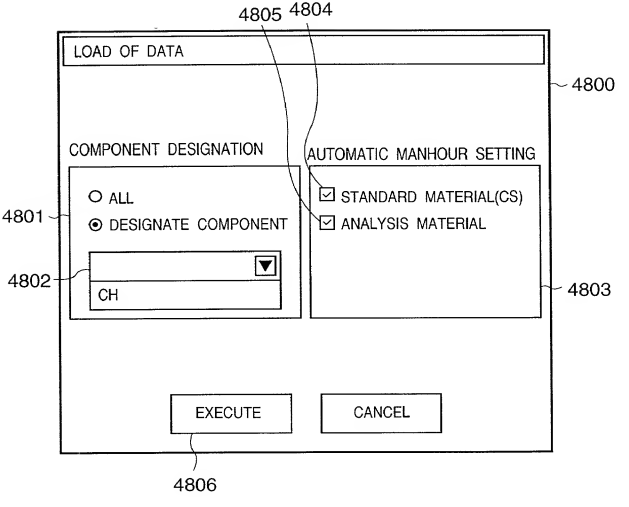


FIG. 48


4805
4804
LOAD OF DATA
4800
COMPONENT DESIGNATION
AUTOMATIC MANHOUR SETTING
ALL
DESIGNATE COMPONENT
STANDARD MATERIAL(CS)
ANALYSIS MATERIAL
4801
4802
CH
4803
EXECUTE
CANCEL
4806

PRODUCT SELECTED

FIG. 49

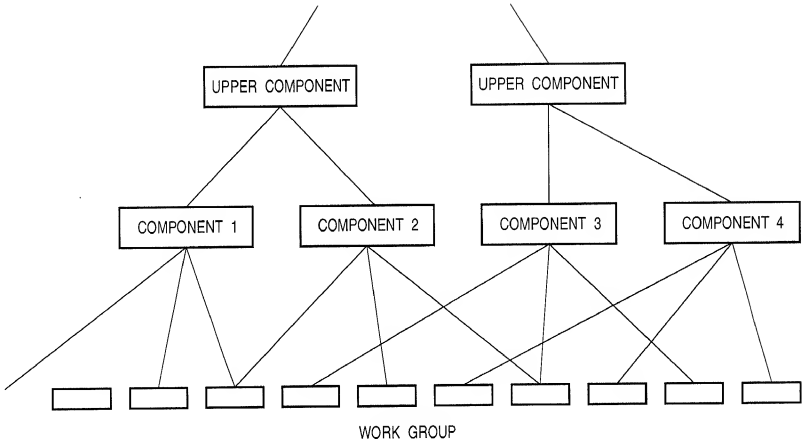


FIG. 50

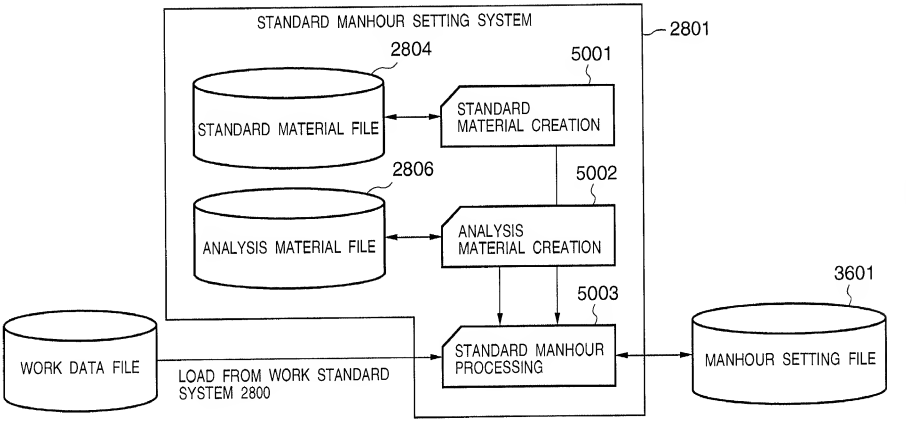

STANDARD MANHOUR SETTING SYSTEM
2801
2804
5001
STANDARD MATERIAL FILE
STANDARD MATERIAL CREATION
2806
5002
ANALYSIS MATERIAL FILE
ANALYSIS MATERIAL CREATION
3601
5003
WORK DATA FILE
LOAD FROM WORK STANDARD SYSTEM 2800
STANDARD MANHOUR PROCESSING
MANHOUR SETTING FILE

FIG. 51

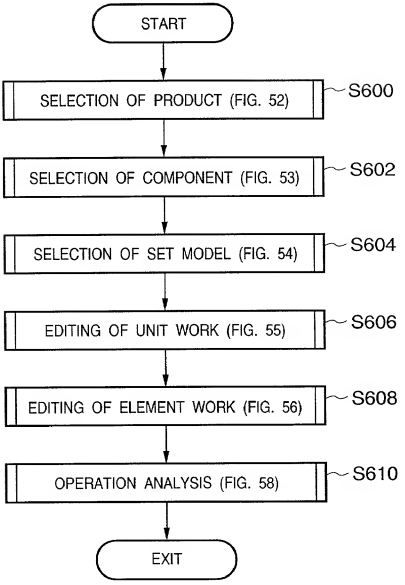

START
SELECTION OF PRODUCT (FIG. 52)
S600
SELECTION OF COMPONENT (FIG. 53)
S602
SELECTION OF SET MODEL (FIG. 54)
S604
EDITING OF UNIT WORK (FIG. 55)
S606
EDITING OF ELEMENT WORK (FIG. 56)
S608
OPERATION ANALYSIS (FIG. 58)
S610
EXIT

FIG. 52

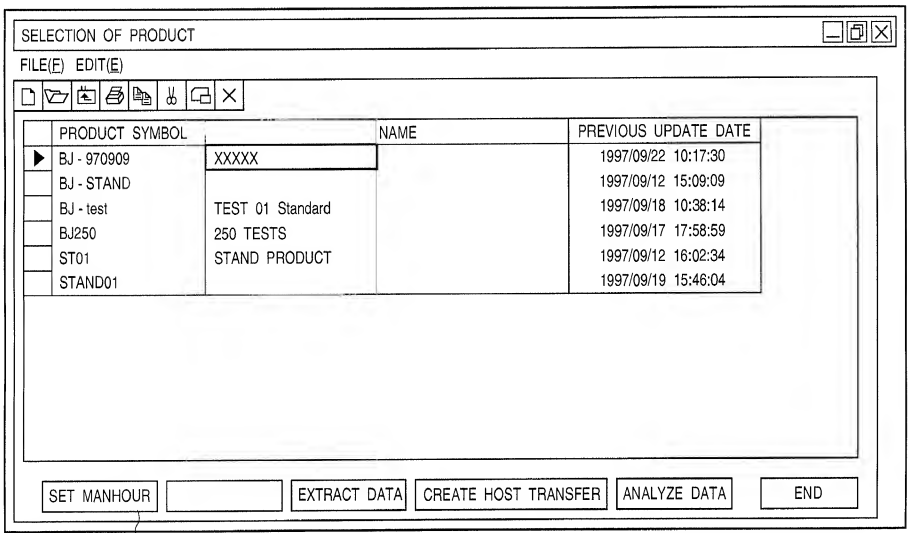

SELECTION OF PRODUCT
FILE(F) EDIT(E)
PRODUCT SYMBOL
NAME
PREVIOUS UPDATE DATE
BJ - 970909
XXXXX
1997/09/22 10:17:30
BJ - STAND
1997/09/12 15:09:09
BJ - test
TEST 01 Standard
1997/09/18 10:38:14
BJ250
250 TESTS
1997/09/17 17:58:59
ST01
STAND PRODUCT
1997/09/12 16:02:34
STAND01
1997/09/19 15:46:04
SET MANHOUR
EXTRACT DATA
CREATE HOST TRANSFER
ANALYZE DATA
END
5201

FIG. 53

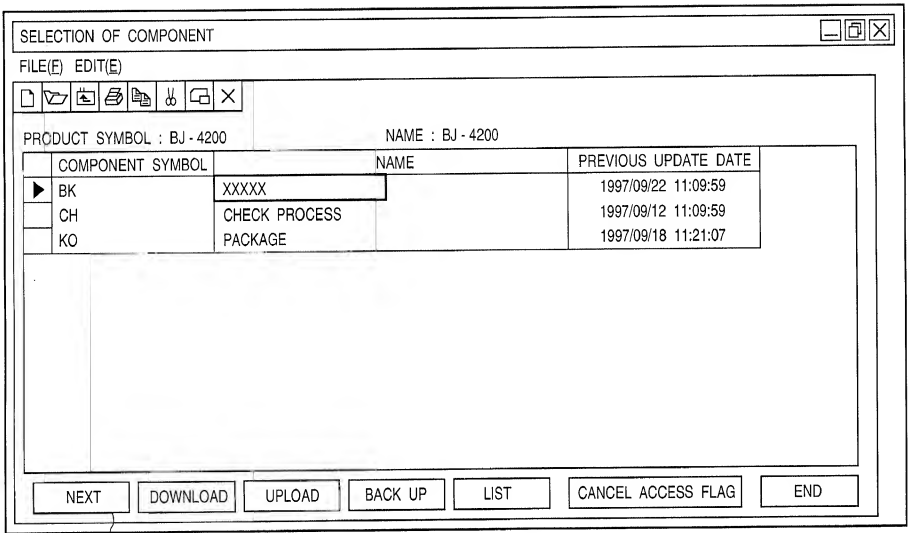

SELECTION OF COMPONENT
FILE(F) EDIT(E)
PRODUCT SYMBOL : BJ - 4200
NAME : BJ - 4200
COMPONENT SYMBOL
NAME
PREVIOUS UPDATE DATE
BK
XXXXX
1997/09/22 11:09:59
CH
CHECK PROCESS
1997/09/12 11:09:59
KO
PACKAGE
1997/09/18 11:21:07
NEXT
DOWNLOAD
UPLOAD
BACK UP
LIST
CANCEL ACCESS FLAG
END
5301

FIG. 54

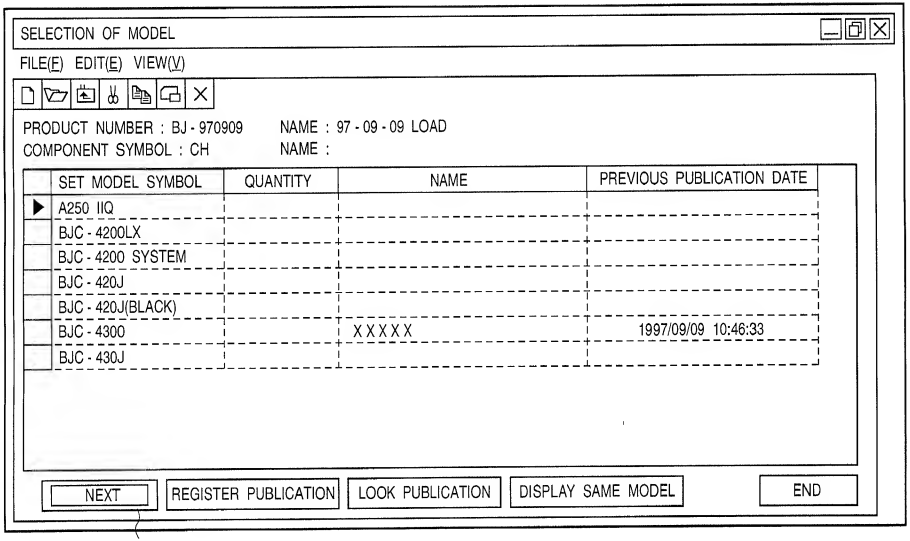

SELECTION OF MODEL
FILE(F) EDIT(E) VIEW(V)
PRODUCT NUMBER : BJ - 970909
NAME : 97 - 09 - 09 LOAD
COMPONENT SYMBOL : CH
NAME :
SET MODEL SYMBOL
QUANTITY
NAME
PREVIOUS PUBLICATION DATE
A250 IIQ
BJC - 4200LX
BJC - 4200 SYSTEM
BJC - 420J
BJC - 420J(BLACK)
BJC - 4300
XXXXX
1997/09/09 10:46:33
BJC - 430J
NEXT
REGISTER PUBLICATION
LOOK PUBLICATION
DISPLAY SAME MODEL
END
5401

FIG. 55

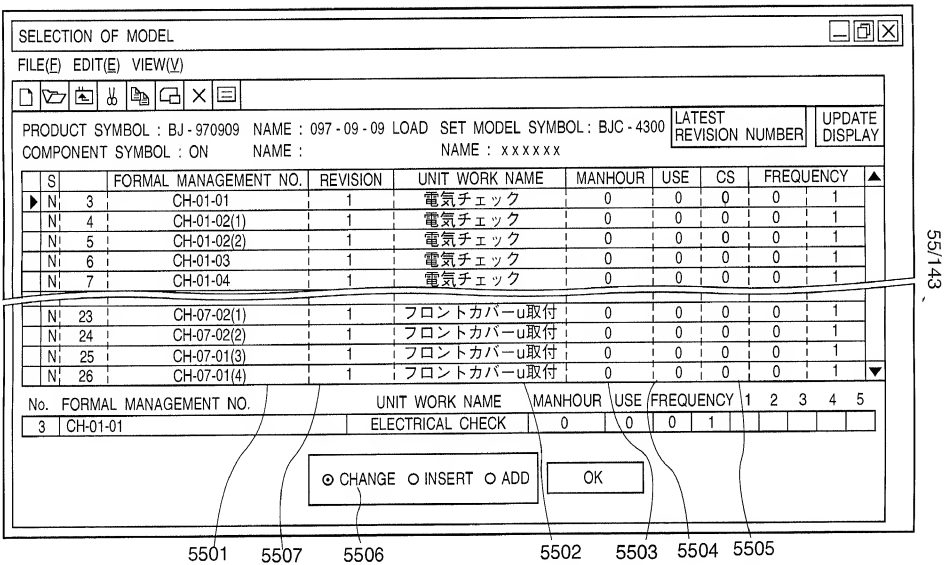

SELECTION OF MODEL
FILE(F) EDIT(E) VIEW(V)
PRODUCT SYMBOL : BJ - 970909 NAME : 097 - 09 - 09 LOAD SET MODEL SYMBOL : BJC - 4300
COMPONENT SYMBOL : ON NAME : NAME : xxxxxx
LATEST REVISION NUMBER
UPDATE DISPLAY
S
FORMAL MANAGEMENT NO.
REVISION
UNIT WORK NAME
MANHOUR
USE
CS
FREQUENCY
N 3 CH-01-01 1 電気チェック 0 0 0 0 1
N 4 CH-01-02(1) 1 電気チェック 0 0 0 0 1
N 5 CH-01-02(2) 1 電気チェック 0 0 0 0 1
N 6 CH-01-03 1 電気チェック 0 0 0 0 1
N 7 CH-01-04 1 電気チェック 0 0 0 0 1
N 23 CH-07-02(1) 1 フロントカバーu取付 0 0 0 0 1
N 24 CH-07-02(2) 1 フロントカバーu取付 0 0 0 0 1
N 25 CH-07-01(3) 1 フロントカバーu取付 0 0 0 0 1
N 26 CH-07-01(4) 1 フロントカバーu取付 0 0 0 0 1
No. FORMAL MANAGEMENT NO. UNIT WORK NAME MANHOUR USE FREQUENCY 1 2 3 4 5
3 CH-01-01 ELECTRICAL CHECK 0 0 0 1
CHANGE INSERT ADD
OK
5501
5507
5506
5502
5503
5504
5505

FIG. 56

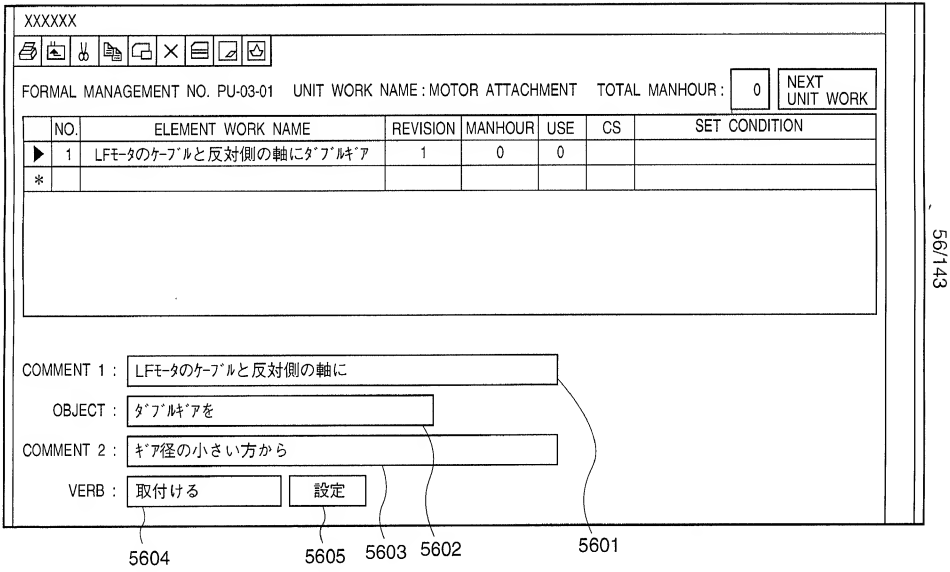
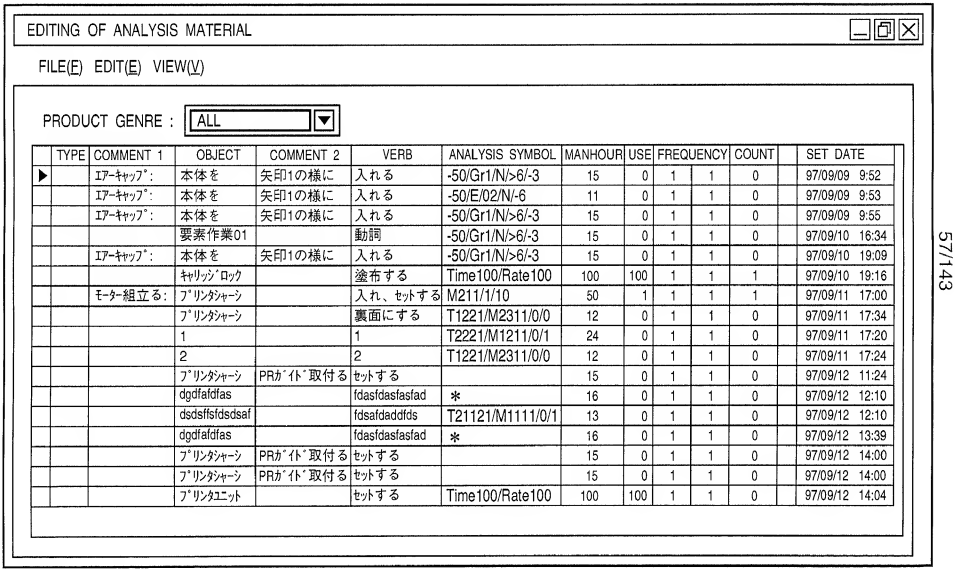

XXXXXX
FORMAL MANAGEMENT NO. PU-03-01
UNIT WORK NAME : MOTOR ATTACHMENT
TOTAL MANHOUR :
0
NEXT UNIT WORK
NO.
ELEMENT WORK NAME
REVISION
MANHOUR
USE
CS
SET CONDITION
1
LFモータのケーブルと反対側の軸にダブルギア
1
0
0
COMMENT 1 :
LFモータのケーブルと反対側の軸に
OBJECT :
ダブルギアを
COMMENT 2 :
ギア径の小さい方から
VERB :
取付ける
設定
5604
5605
5603
5602
5601

FIG. 57



EDITING OF ANALYSIS MATERIAL

FILE(F) EDIT(E) VIEW(V)

PRODUCT GENRE : ALL

	TYPE	COMMENT 1	OBJECT	COMMENT 2	VERB	ANALYSIS SYMBOL	MANHOUR	USE	FREQUENCY		COUNT	SET DATE
▶		ｴｱｰｷｬｯﾌﾟ:	本体を	矢印1の様に	入れる	-50/Gr1/N/>6/-3	15	0	1	1	0	97/09/09 9:52
		ｴｱｰｷｬｯﾌﾟ:	本体を	矢印1の様に	入れる	-50/E/02/N/-6	11	0	1	1	0	97/09/09 9:53
		ｴｱｰｷｬｯﾌﾟ:	本体を	矢印1の様に	入れる	-50/Gr1/N/>6/-3	15	0	1	1	0	97/09/09 9:55
			要素作業01		動詞	-50/Gr1/N/>6/-3	15	0	1	1	0	97/09/10 16:34
		ｴｱｰｷｬｯﾌﾟ:	本体を	矢印1の様に	入れる	-50/Gr1/N/>6/-3	15	0	1	1	0	97/09/10 19:09
			ｷｬﾘｯｼﾞﾛｯｸ		塗布する	Time100/Rate100	100	100	1	1	1	97/09/10 19:16
		ﾓｰﾀｰ組立る:	ﾌﾟﾘﾝﾀｼｬｰｼ		入れ、ｾｯﾄする	M211/1/10	50	1	1	1	1	97/09/11 17:00
			ﾌﾟﾘﾝﾀｼｬｰｼ		裏面にする	T1221/M2311/0/0	12	0	1	1	0	97/09/11 17:34
			1		1	T2221/M1211/0/1	24	0	1	1	0	97/09/11 17:20
			2		2	T1221/M2311/0/0	12	0	1	1	0	97/09/11 17:24
			ﾌﾟﾘﾝﾀｼｬｰｼ	PRｶﾞｲﾄﾞ取付る	ｾｯﾄする		15	0	1	1	0	97/09/12 11:24
			dgdfafdfas		fdasfdasfasfad	*	16	0	1	1	0	97/09/12 12:10
			dsdsffsfdsdsaf		fdsafdaddfds	T21121/M1111/0/1	13	0	1	1	0	97/09/12 12:10
			dgdfafdfas		fdasfdasfasfad	*	16	0	1	1	0	97/09/12 13:39
			ﾌﾟﾘﾝﾀｼｬｰｼ	PRｶﾞｲﾄﾞ取付る	ｾｯﾄする		15	0	1	1	0	97/09/12 14:00
			ﾌﾟﾘﾝﾀｼｬｰｼ	PRｶﾞｲﾄﾞ取付る	ｾｯﾄする		15	0	1	1	0	97/09/12 14:00
			ﾌﾟﾘﾝﾀﾕﾆｯﾄ		ｾｯﾄする	Time100/Rate100	100	100	1	1	0	97/09/12 14:04

FIG. 58

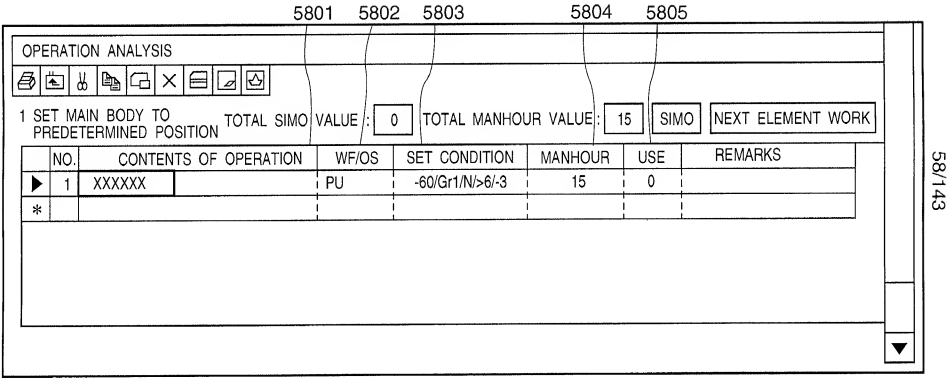

5801
5802
5803
5804
5805
OPERATION ANALYSIS
1 SET MAIN BODY TO PREDETERMINED POSITION
TOTAL SIMO VALUE : 0
TOTAL MANHOUR VALUE : 15
SIMO
NEXT ELEMENT WORK
NO.
CONTENTS OF OPERATION
WF/OS
SET CONDITION
MANHOUR
USE
REMARKS
1
XXXXXX
PU
-60/Gr1/N/>6/-3
15
0

FIG. 59

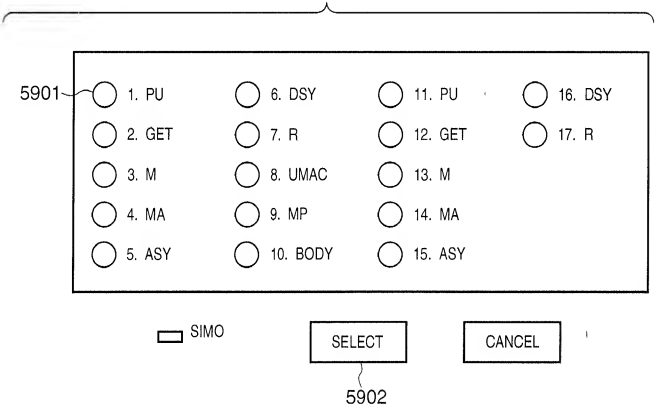

5901
1. PU
2. GET
3. M
4. MA
5. ASY
6. DSY
7. R
8. UMAC
9. MP
10. BODY
11. PU
12. GET
13. M
14. MA
15. ASY
16. DSY
17. R
SIMO
SELECT
CANCEL
5902

FIG. 60

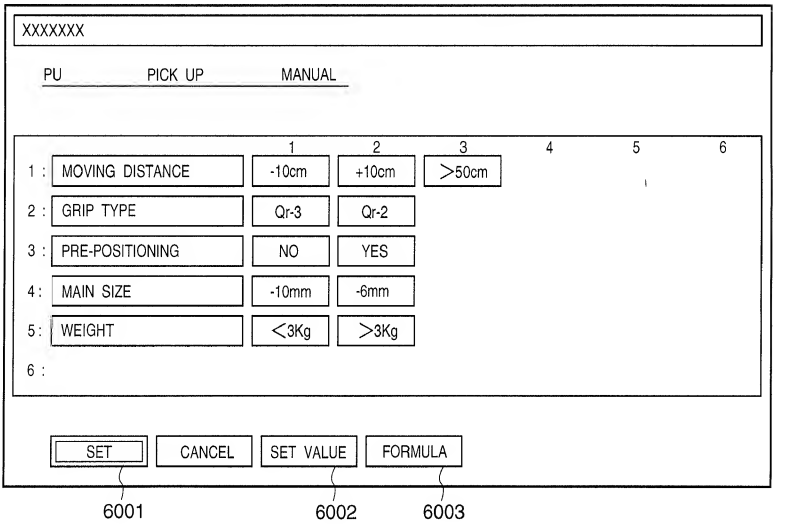

XXXXXXX
PU
PICK UP
MANUAL
1
2
3
4
5
6
1 :
MOVING DISTANCE
-10cm
+10cm
>50cm
2 :
GRIP TYPE
Qr-3
Qr-2
3 :
PRE-POSITIONING
NO
YES
4 :
MAIN SIZE
-10mm
-6mm
5 :
WEIGHT
<3Kg
>3Kg
6 :
SET
CANCEL
SET VALUE
FORMULA
6001
6002
6003

FIG. 61

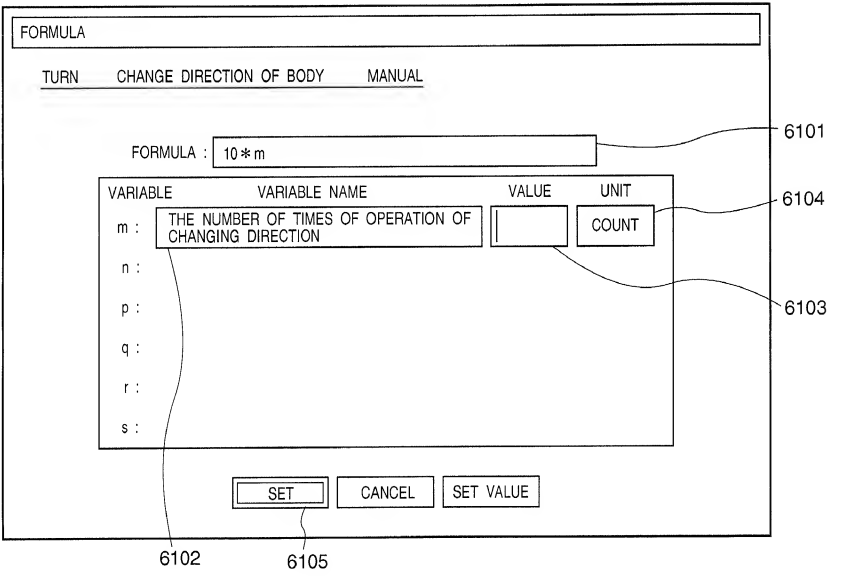

FORMULA
TURN
CHANGE DIRECTION OF BODY
MANUAL
FORMULA :
10 * m
6101
VARIABLE
VARIABLE NAME
VALUE
UNIT
6104
m :
THE NUMBER OF TIMES OF OPERATION OF CHANGING DIRECTION
COUNT
n :
p :
q :
r :
s :
6103
SET
CANCEL
SET VALUE
6102
6105

FIG. 62

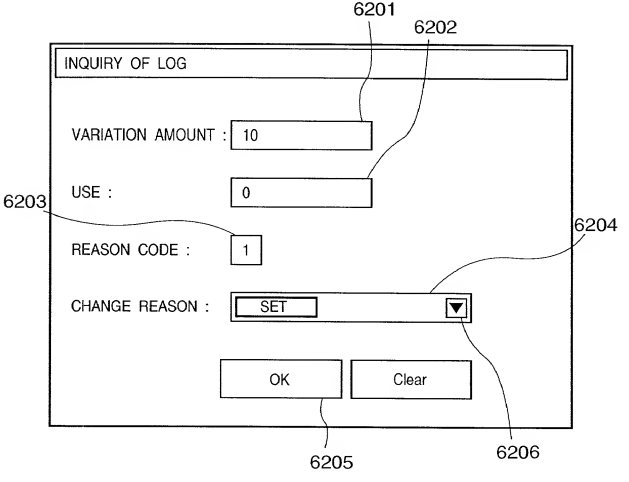

6201
6202
INQUIRY OF LOG
VARIATION AMOUNT :
10
USE :
0
6203
6204
REASON CODE :
1
CHANGE REASON :
SET
OK
Clear
6205
6206

FIG. 63

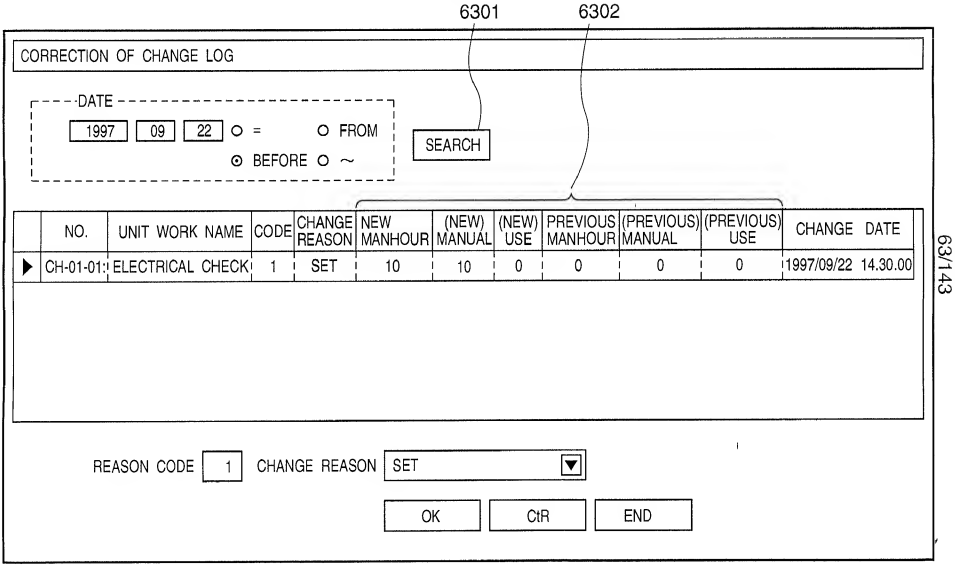
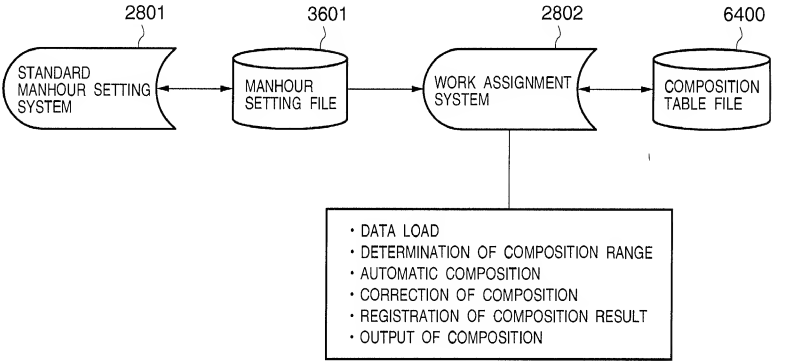
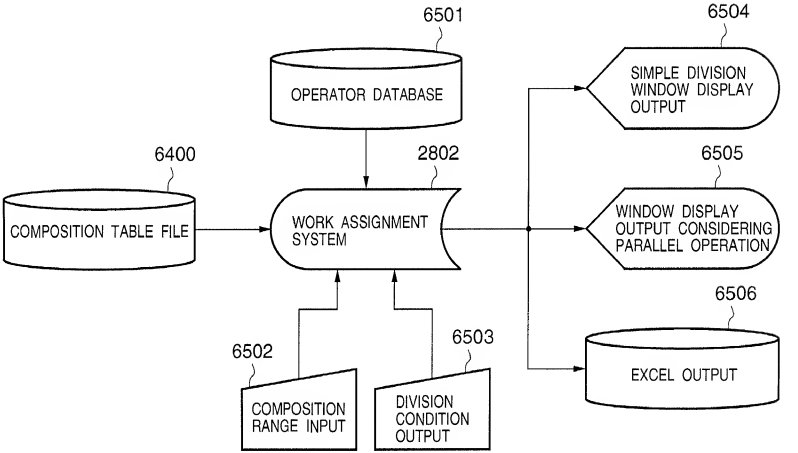

6301
6302
CORRECTION OF CHANGE LOG
DATE
1997
09
22
= FROM
BEFORE ~
SEARCH
NO.
UNIT WORK NAME
CODE
CHANGE REASON
NEW MANHOUR
(NEW) MANUAL
(NEW) USE
PREVIOUS MANHOUR
(PREVIOUS) MANUAL
(PREVIOUS) USE
CHANGE DATE
CH-01-01:
ELECTRICAL CHECK
1
SET
10
10
0
0
0
0
1997/09/22 14.30.00
REASON CODE
1
CHANGE REASON
SET
OK
CtR
END

FIG. 64


2801
3601
2802
6400
STANDARD MANHOUR SETTING SYSTEM
MANHOUR SETTING FILE
WORK ASSIGNMENT SYSTEM
COMPOSITION TABLE FILE
• DATA LOAD
• DETERMINATION OF COMPOSITION RANGE
• AUTOMATIC COMPOSITION
• CORRECTION OF COMPOSITION
• REGISTRATION OF COMPOSITION RESULT
• OUTPUT OF COMPOSITION

JP2007-257260

FIG. 65



TRANSLATION

FIG. 66

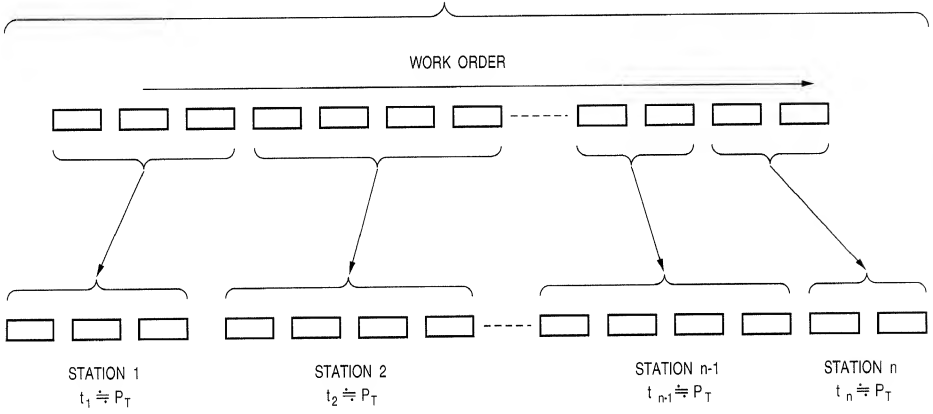


FIG. 67

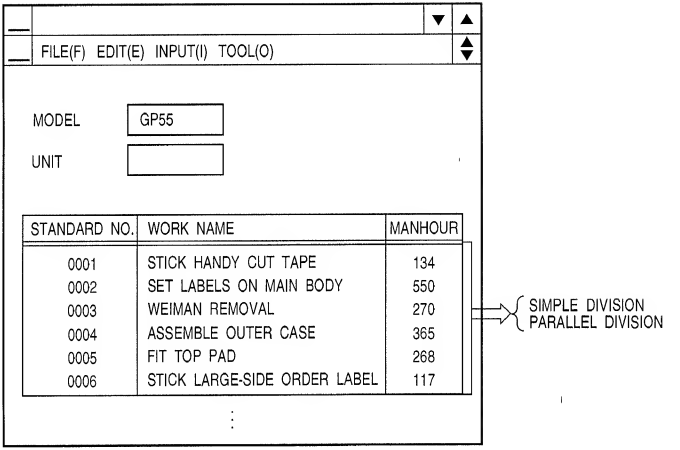

FILE(F) EDIT(E) INPUT(I) TOOL(O)
MODEL
GP55
UNIT
STANDARD NO.
WORK NAME
MANHOUR
0001
STICK HANDY CUT TAPE
134
0002
SET LABELS ON MAIN BODY
550
0003
WEIMAN REMOVAL
270
0004
ASSEMBLE OUTER CASE
365
0005
FIT TOP PAD
268
0006
STICK LARGE-SIDE ORDER LABEL
117
SIMPLE DIVISION
PARALLEL DIVISION

FIG. 68

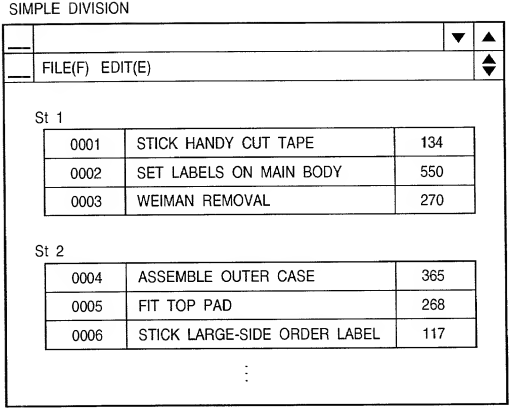

SIMPLE DIVISION
FILE(F) EDIT(E)
St 1
0001 STICK HANDY CUT TAPE 134
0002 SET LABELS ON MAIN BODY 550
0003 WEIMAN REMOVAL 270
St 2
0004 ASSEMBLE OUTER CASE 365
0005 FIT TOP PAD 268
0006 STICK LARGE-SIDE ORDER LABEL 117

FIG. 69

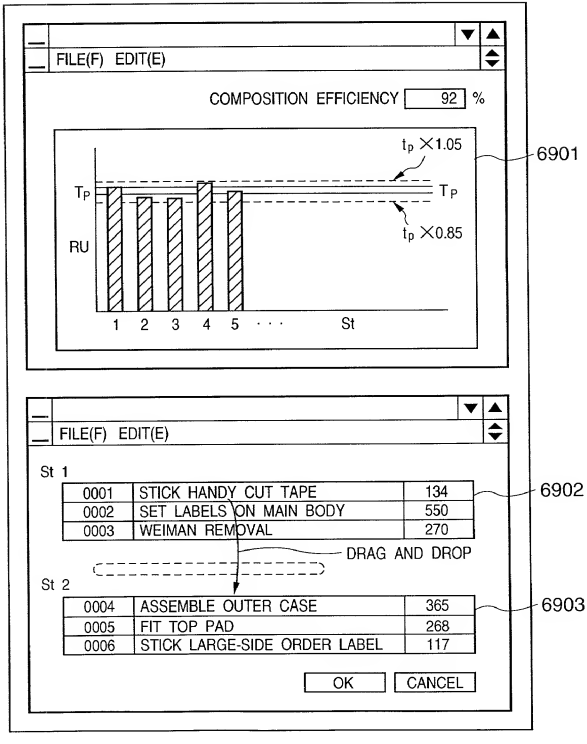

FILE(F) EDIT(E)
COMPOSITION EFFICIENCY 92 %
$t_p \times 1.05$
T_P
T_P
$t_p \times 0.85$
RU
1 2 3 4 5 · · · St
6901
FILE(F) EDIT(E)
St 1
0001 STICK HANDY CUT TAPE 134
0002 SET LABELS ON MAIN BODY 550
0003 WEIMAN REMOVAL 270
6902
DRAG AND DROP
St 2
0004 ASSEMBLE OUTER CASE 365
0005 FIT TOP PAD 268
0006 STICK LARGE-SIDE ORDER LABEL 117
6903
OK
CANCEL

FIG. 70

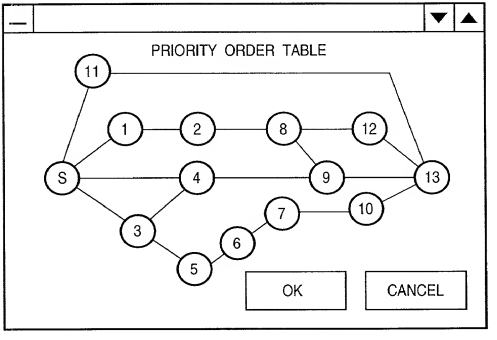


FIG. 71

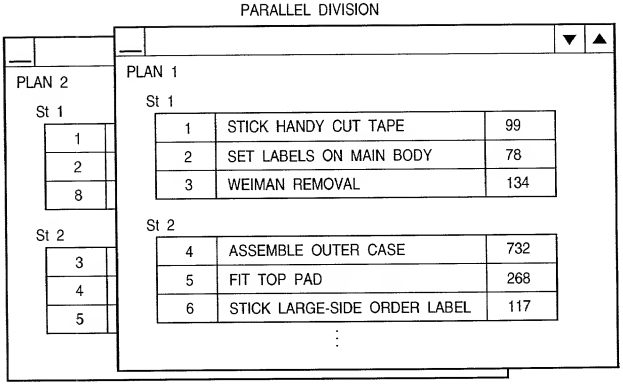

PARALLEL DIVISION
PLAN 2
St 1
1
2
8
St 2
3
4
5
PLAN 1
St 1
1 STICK HANDY CUT TAPE 99
2 SET LABELS ON MAIN BODY 78
3 WEIMAN REMOVAL 134
St 2
4 ASSEMBLE OUTER CASE 732
5 FIT TOP PAD 268
6 STICK LARGE-SIDE ORDER LABEL 117

FIG. 72

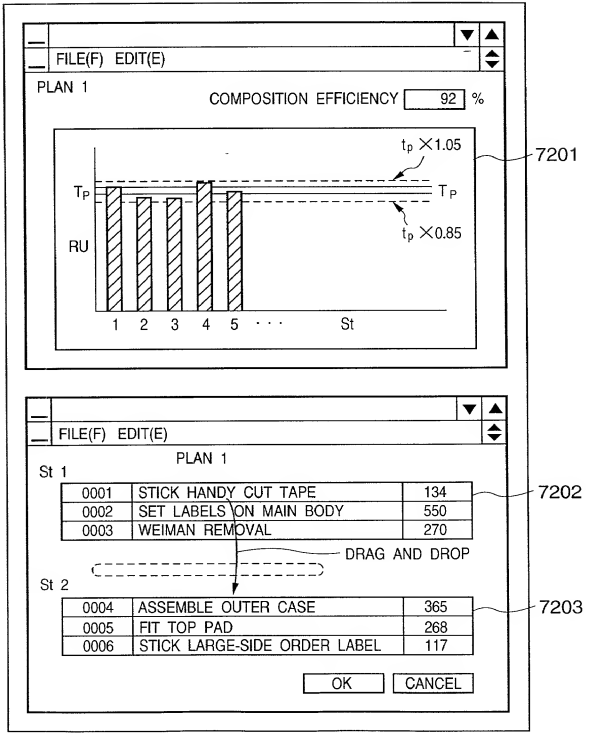
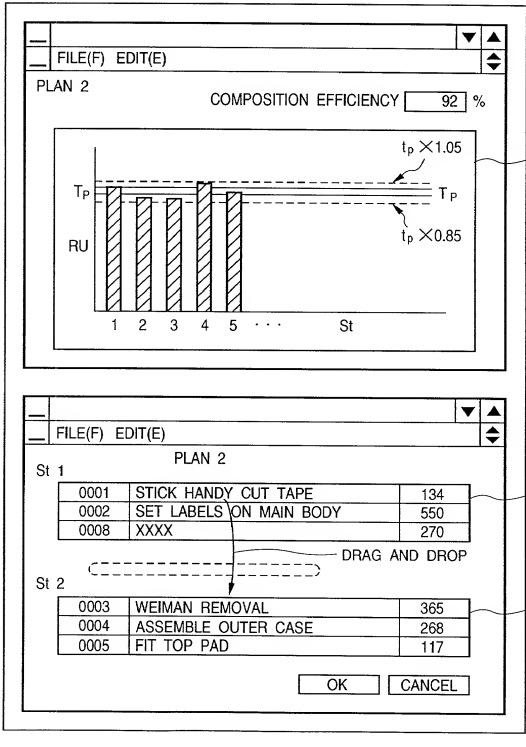

FILE(F) EDIT(E)
PLAN 1
COMPOSITION EFFICIENCY 92 %
tp ×1.05
TP
TP
tp ×0.85
RU
1 2 3 4 5 · · · St
7201
FILE(F) EDIT(E)
PLAN 1
St 1
0001 STICK HANDY CUT TAPE 134
0002 SET LABELS ON MAIN BODY 550
0003 WEIMAN REMOVAL 270
7202
DRAG AND DROP
St 2
0004 ASSEMBLE OUTER CASE 365
0005 FIT TOP PAD 268
0006 STICK LARGE-SIDE ORDER LABEL 117
7203
OK
CANCEL

FIG. 73


FILE(F) EDIT(E)
PLAN 2
COMPOSITION EFFICIENCY 92 %
$t_P \times 1.05$
T_P
T_P
$t_P \times 0.85$
RU
1 2 3 4 5 · · · St
7301
FILE(F) EDIT(E)
PLAN 2
St 1
0001 STICK HANDY CUT TAPE 134
0002 SET LABELS ON MAIN BODY 550
0008 XXXX 270
7302
DRAG AND DROP
St 2
0003 WEIMAN REMOVAL 365
0004 ASSEMBLE OUTER CASE 268
0005 FIT TOP PAD 117
7303
OK
CANCEL

JP2010027648A

FIG. 74

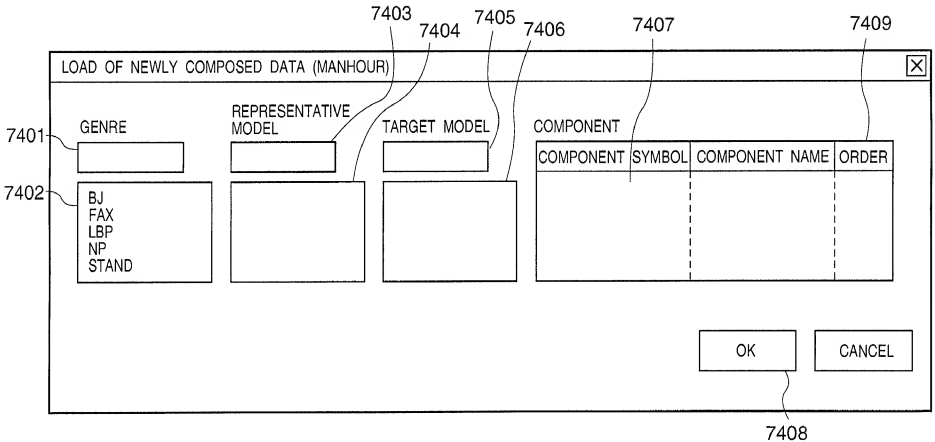


FIG. 75

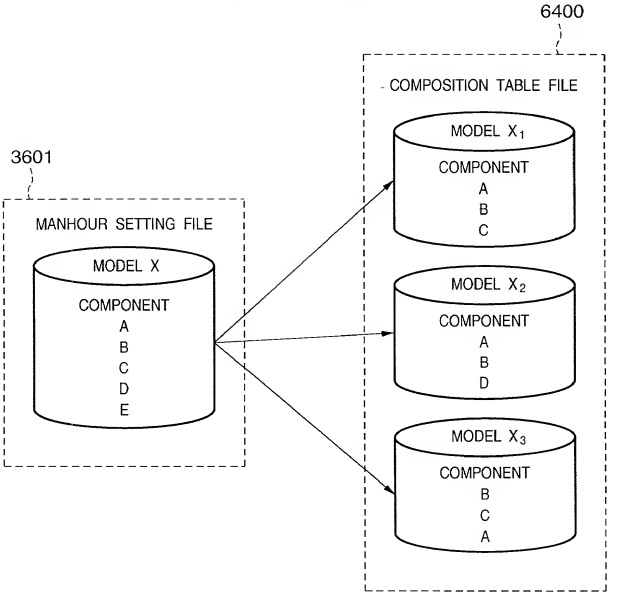

6400
COMPOSITION TABLE FILE
MODEL X1
COMPONENT
A
B
C
MODEL X2
COMPONENT
A
B
D
MODEL X3
COMPONENT
B
C
A
3601
MANHOUR SETTING FILE
MODEL X
COMPONENT
A
B
C
D
E

FIG. 76

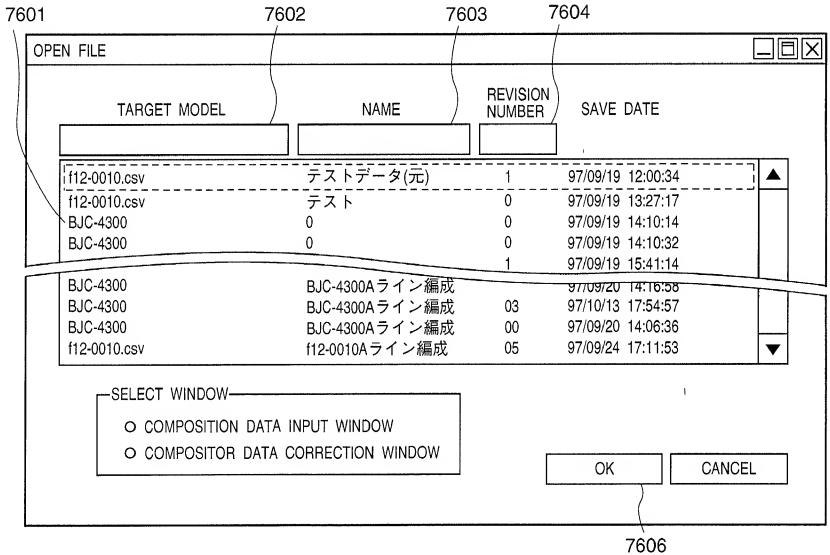

7601
7602
7603
7604
OPEN FILE
TARGET MODEL
NAME
REVISION NUMBER
SAVE DATE
f12-0010.csv テストデータ(元) 1 97/09/19 12:00:34
f12-0010.csv テスト 0 97/09/19 13:27:17
BJC-4300 0 0 97/09/19 14:10:14
BJC-4300 0 0 97/09/19 14:10:32
1 97/09/19 15:41:14
BJC-4300 BJC-4300Aライン編成 97/09/20 14:16:58
BJC-4300 BJC-4300Aライン編成 03 97/10/13 17:54:57
BJC-4300 BJC-4300Aライン編成 00 97/09/20 14:06:36
f12-0010.csv f12-0010Aライン編成 05 97/09/24 17:11:53
SELECT WINDOW
O COMPOSITION DATA INPUT WINDOW
O COMPOSITOR DATA CORRECTION WINDOW
OK
CANCEL
7606

FIG. 77

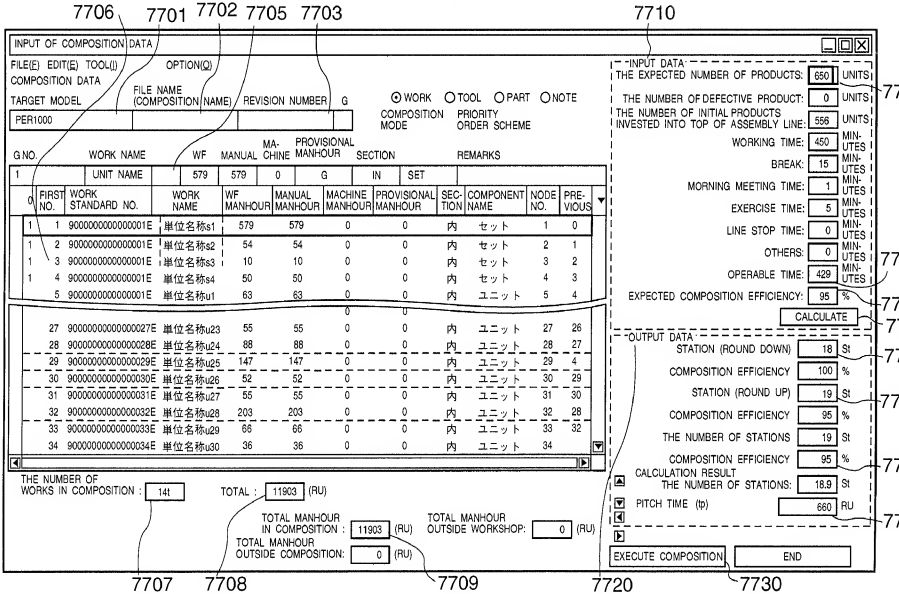

7706
7701
7702
7705
7703
7710
INPUT OF COMPOSITION DATA
FILE(F) EDIT(E) TOOL(I) OPTION(Q)
COMPOSITION DATA
TARGET MODEL
FILE NAME (COMPOSITION NAME)
REVISION NUMBER
G
PER1000
WORK
TOOL
PART
NOTE
COMPOSITION MODE
PRIORITY ORDER SCHEME
G NO.
WORK NAME
WF
MANUAL
MACHINE
PROVISIONAL MANHOUR
SECTION
REMARKS
UNIT NAME
579
579
0
G
IN
SET
FIRST NO.
WORK STANDARD NO.
WORK NAME
WF MANHOUR
MANUAL MANHOUR
MACHINE MANHOUR
PROVISIONAL MANHOUR
SECTION
COMPONENT NAME
NODE NO.
PREVIOUS
1 1 900000000000001E 単位名称s1 579 579 0 0 内 セット 1 0
1 2 900000000000001E 単位名称s2 54 54 0 0 内 セット 2 1
1 3 900000000000001E 単位名称s3 10 10 0 0 内 セット 3 2
1 4 900000000000001E 単位名称s4 50 50 0 0 内 セット 4 3
5 900000000000001E 単位名称u1 63 63 0 0 内 ユニット 5 4
27 900000000000027E 単位名称u23 55 55 0 0 内 ユニット 27 26
28 900000000000028E 単位名称u24 88 88 0 0 内 ユニット 28 27
29 900000000000029E 単位名称u25 147 147 0 0 内 ユニット 29 4
30 900000000000030E 単位名称u26 52 52 0 0 内 ユニット 30 29
31 900000000000031E 単位名称u27 55 55 0 0 内 ユニット 31 30
32 900000000000032E 単位名称u28 203 203 0 0 内 ユニット 32 28
33 900000000000033E 単位名称u29 66 66 0 0 内 ユニット 33 32
34 900000000000034E 単位名称u30 36 36 0 0 内 ユニット 34
THE NUMBER OF WORKS IN COMPOSITION : 141
TOTAL : 11903 (RU)
TOTAL MANHOUR IN COMPOSITION : 11903 (RU)
TOTAL MANHOUR OUTSIDE COMPOSITION: 0 (RU)
TOTAL MANHOUR OUTSIDE WORKSHOP: 0 (RU)
INPUT DATA
THE EXPECTED NUMBER OF PRODUCTS: 650 UNITS
THE NUMBER OF DEFECTIVE PRODUCT: 0 UNITS
THE NUMBER OF INITIAL PRODUCTS INVESTED INTO TOP OF ASSEMBLY LINE: 556 UNITS
WORKING TIME: 450 MINUTES
BREAK: 15 MINUTES
MORNING MEETING TIME: 1 MINUTES
EXERCISE TIME: 5 MINUTES
LINE STOP TIME: 0 MINUTES
OTHERS: 0 MINUTES
OPERABLE TIME: 429 MINUTES
EXPECTED COMPOSITION EFFICIENCY: 95 %
CALCULATE
OUTPUT DATA
STATION (ROUND DOWN) 18 St
COMPOSITION EFFICIENCY 100 %
STATION (ROUND UP) 19 St
COMPOSITION EFFICIENCY 95 %
THE NUMBER OF STATIONS 19 St
COMPOSITION EFFICIENCY 95 %
CALCULATION RESULT
THE NUMBER OF STATIONS: 18.9 St
PITCH TIME (tp) 660 RU
EXECUTE COMPOSITION
END
7710a
7710b
7710c
7710d
7720a
7720b
7720c
7720d
7707
7708
7709
7720
7730

FIG. 78

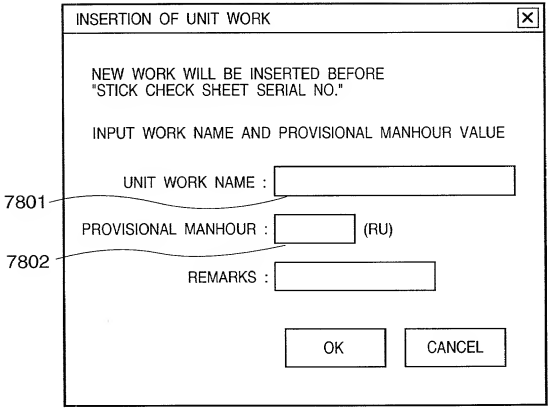

INSERTION OF UNIT WORK
NEW WORK WILL BE INSERTED BEFORE
"STICK CHECK SHEET SERIAL NO."
INPUT WORK NAME AND PROVISIONAL MANHOUR VALUE
UNIT WORK NAME :
7801
PROVISIONAL MANHOUR :
(RU)
7802
REMARKS :
OK
CANCEL

FIG. 79

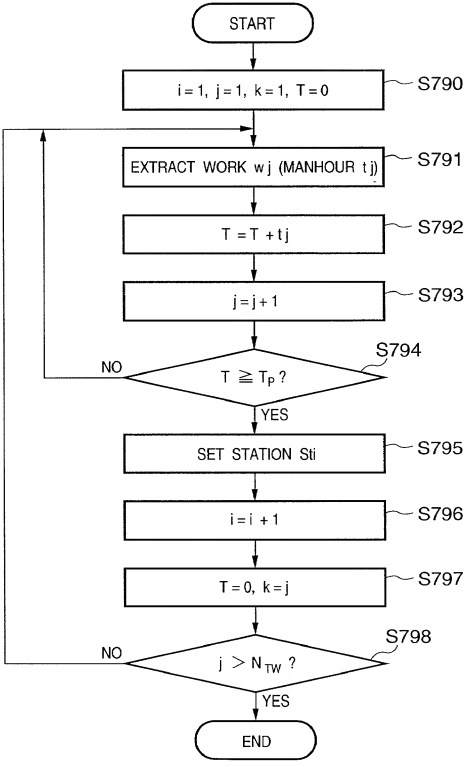

START
i = 1, j = 1, k = 1, T = 0
S790
EXTRACT WORK w j (MANHOUR t j)
S791
T = T + t j
S792
j = j + 1
S793
S794
NO
T ≧ T_P ?
YES
SET STATION Sti
S795
i = i + 1
S796
T = 0, k = j
S797
S798
NO
j > N_TW ?
YES
END

FIG. 80

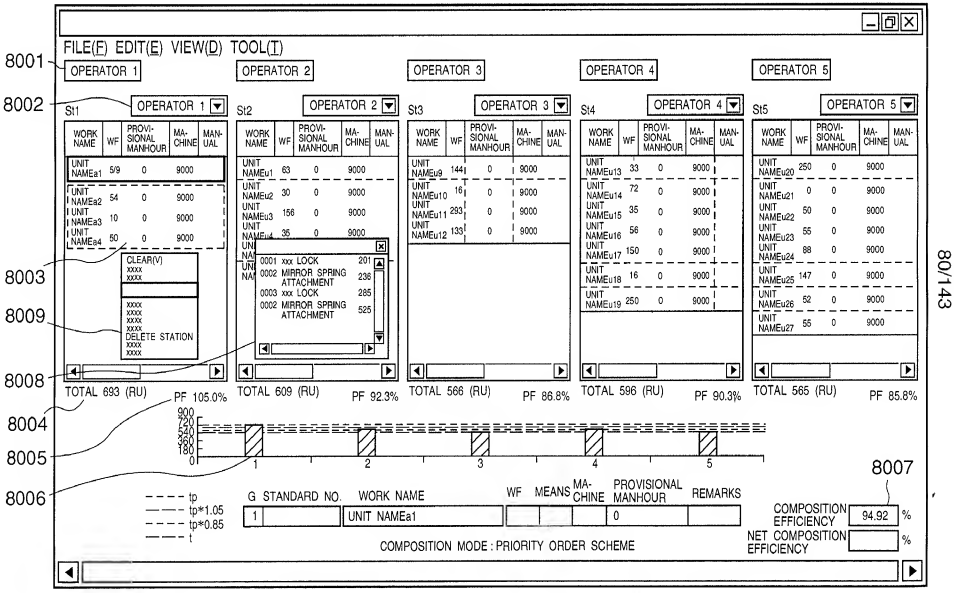

FILE(F) EDIT(E) VIEW(D) TOOL(T)
8001
OPERATOR 1
OPERATOR 2
OPERATOR 3
OPERATOR 4
OPERATOR 5
8002
St1
St2
St3
St4
St5
WORK NAME
WF
PROVISIONAL MANHOUR
MACHINE
MANUAL
8003
CLEAR(V)
8009
DELETE STATION
8008
TOTAL 693 (RU)
PF 105.0%
TOTAL 609 (RU)
PF 92.3%
TOTAL 566 (RU)
PF 86.8%
TOTAL 596 (RU)
PF 90.3%
TOTAL 565 (RU)
PF 85.8%
8004
900
720
540
360
180
0
8005
1
2
3
4
5
8006
tp
tp*1.05
tp*0.85
t
8007
G
STANDARD NO.
WORK NAME
WF
MEANS
MACHINE
PROVISIONAL MANHOUR
REMARKS
COMPOSITION MODE : PRIORITY ORDER SCHEME
COMPOSITION EFFICIENCY
94.92
%
NET COMPOSITION EFFICIENCY
%

FIG. 81

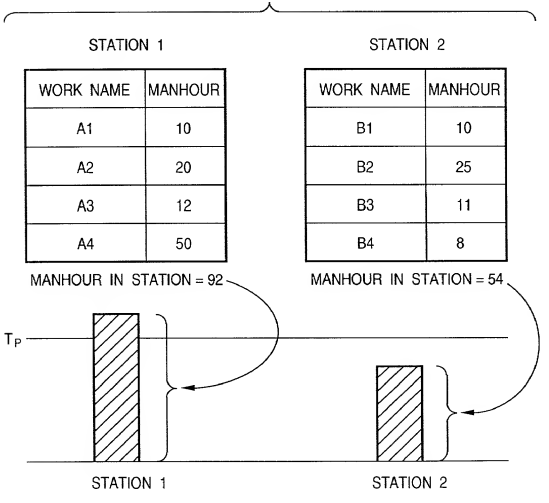

STATION 1
STATION 2
WORK NAME
MANHOUR
A1
10
A2
20
A3
12
A4
50
WORK NAME
MANHOUR
B1
10
B2
25
B3
11
B4
8
MANHOUR IN STATION = 92
MANHOUR IN STATION = 54
T_P
STATION 1
STATION 2

FIG. 82

STATION 1

WORK NAME	MANHOUR
A1	10
A2	20
A3	12
A4 - 1	25
A4 - 2	25

MANHOUR IN STATION = 92

STATION 2

WORK NAME	MANHOUR
B1	10
B2	25
B3	11
B4	8

MANHOUR IN STATION = 54

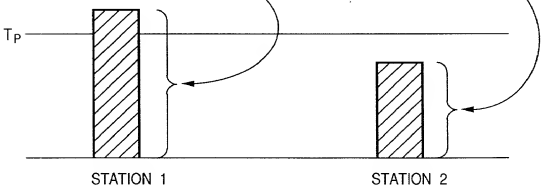


FIG. 83

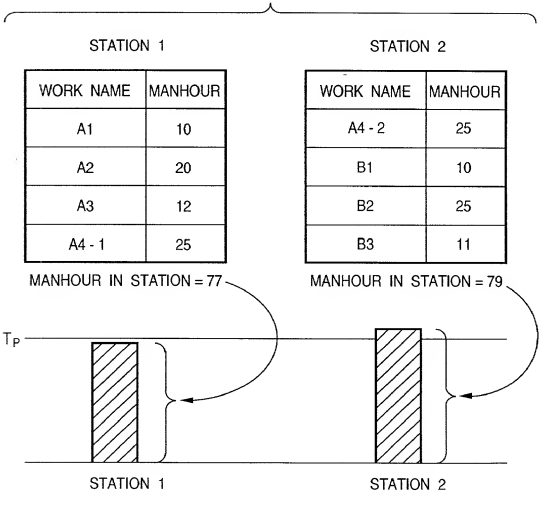

STATION 1
WORK NAME
MANHOUR
A1
10
A2
20
A3
12
A4 - 1
25
MANHOUR IN STATION = 77
STATION 2
WORK NAME
MANHOUR
A4 - 2
25
B1
10
B2
25
B3
11
MANHOUR IN STATION = 79
T_P
STATION 1
STATION 2

FIG. 84

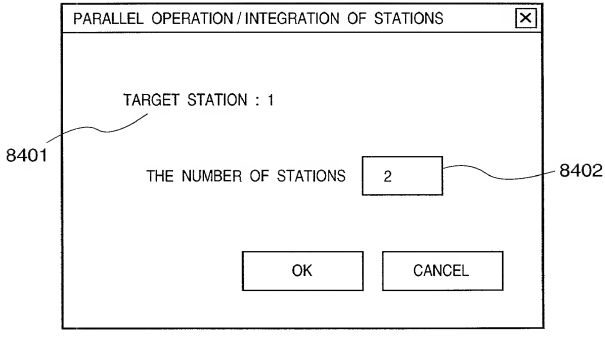

PARALLEL OPERATION / INTEGRATION OF STATIONS
TARGET STATION : 1
8401
THE NUMBER OF STATIONS
2
8402
OK
CANCEL

FIG. 85

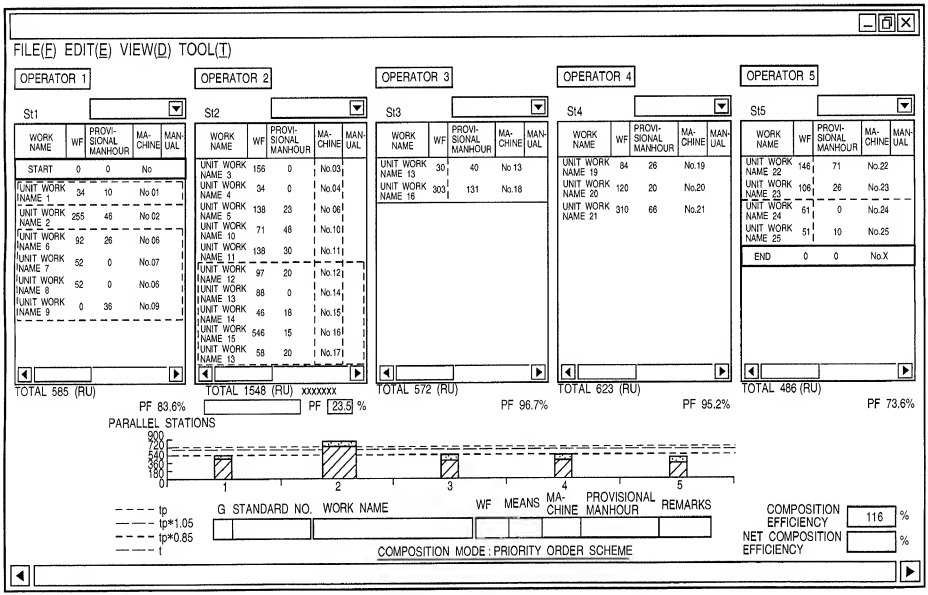

FILE(F) EDIT(E) VIEW(D) TOOL(T)
OPERATOR 1
OPERATOR 2
OPERATOR 3
OPERATOR 4
OPERATOR 5
St1
St2
St3
St4
St5
WORK NAME
WF
PROVISIONAL MANHOUR
MACHINE
MANUAL
START 0 0 No
UNIT WORK NAME 1 54 10 No.01
UNIT WORK NAME 2 255 46 No.02
UNIT WORK NAME 6 92 26 No.06
UNIT WORK NAME 7 52 0 No.07
UNIT WORK NAME 8 52 0 No.08
UNIT WORK NAME 9 0 36 No.09
UNIT WORK NAME 3 156 0 No.03
UNIT WORK NAME 4 34 0 No.04
UNIT WORK NAME 5 138 23 No.05
UNIT WORK NAME 10 71 48 No.10
UNIT WORK NAME 11 138 30 No.11
UNIT WORK NAME 12 97 20 No.12
UNIT WORK NAME 13 88 0 No.14
UNIT WORK NAME 14 46 18 No.15
UNIT WORK NAME 15 546 15 No.16
UNIT WORK NAME 13 58 20 No.17
UNIT WORK NAME 13 30 40 No.13
UNIT WORK NAME 16 303 131 No.18
UNIT WORK NAME 19 84 26 No.19
UNIT WORK NAME 20 120 20 No.20
UNIT WORK NAME 21 310 66 No.21
UNIT WORK NAME 22 146 71 No.22
UNIT WORK NAME 23 106 26 No.23
UNIT WORK NAME 24 61 0 No.24
UNIT WORK NAME 25 51 10 No.25
END 0 0 No.X
TOTAL 585 (RU)
TOTAL 1548 (RU) xxxxxxx
TOTAL 572 (RU)
TOTAL 623 (RU)
TOTAL 486 (RU)
PF 83.6%
PF 23.5 %
PF 96.7%
PF 95.2%
PF 73.6%
PARALLEL STATIONS
900
720
540
360
180
0
1
2
3
4
5
tp
tp*1.05
tp*0.85
t
G STANDARD NO.
WORK NAME
WF
MEANS
MACHINE
PROVISIONAL MANHOUR
REMARKS
COMPOSITION MODE : PRIORITY ORDER SCHEME
COMPOSITION EFFICIENCY
116
%
NET COMPOSITION EFFICIENCY
%

FIG. 86

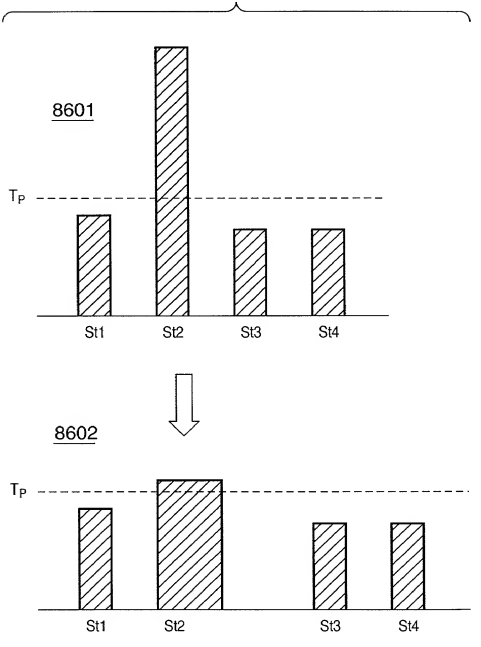


FIG. 87

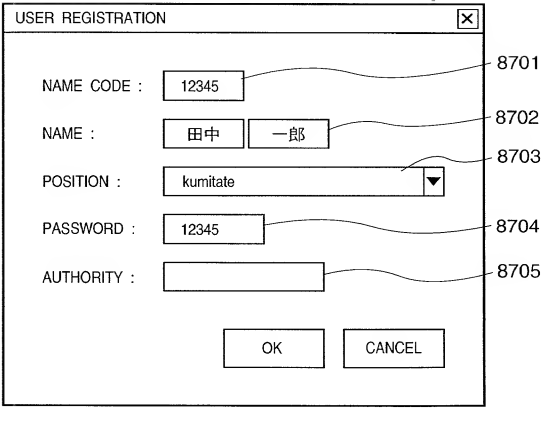

USER REGISTRATION
NAME CODE :
12345
NAME :
田中
一郎
POSITION :
kumitate
PASSWORD :
12345
AUTHORITY :
OK
CANCEL
8701
8702
8703
8704
8705

FIG. 88

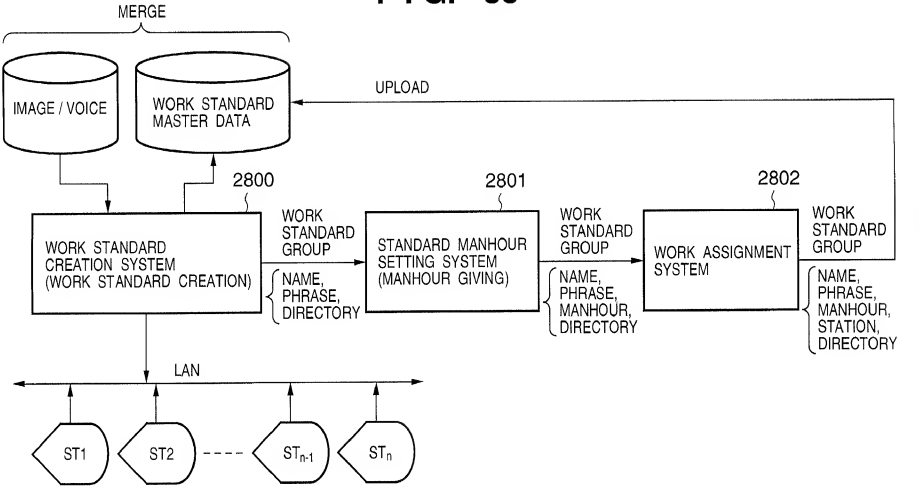

MERGE
IMAGE / VOICE
WORK STANDARD MASTER DATA
UPLOAD
2800
2801
2802
WORK STANDARD CREATION SYSTEM (WORK STANDARD CREATION)
WORK STANDARD GROUP
NAME, PHRASE, DIRECTORY
STANDARD MANHOUR SETTING SYSTEM (MANHOUR GIVING)
WORK STANDARD GROUP
NAME, PHRASE, MANHOUR, DIRECTORY
WORK ASSIGNMENT SYSTEM
WORK STANDARD GROUP
NAME, PHRASE, MANHOUR, STATION, DIRECTORY
LAN
ST1
ST2
STn-1
STn

FIG. 89

DIRECTORY NAME	IMAGE DATA	OPERATION (VERB)	PARAMETER 1	PARAMETER 2	PARAMETER 3
xxxxxx1	SCREW	SCREW	SCREW CLOCKWISE	DISTANCE MOVEMENT 10mm	TORQUE 10Kg.M
xxxxxx2	SCREW	SCREW	SCREW CLOCKWISE	DISTANCE MOVEMENT 20mm	TORQUE 20Kg.M
xxxxxx3	SCREW	SCREW	SCREW CLOCKWISE	DISTANCE MOVEMENT 20mm	TORQUE 30Kg.M
...	...	...	...	...	...
yyyyyy1	ROTATE	ROTATE	CLOCKWISE	DISTANCE MOVEMENT 20mm	
yyyyyy2	ROTATE	ROTATE	COUNTERCLOCKWISE	DISTANCE MOVEMENT 20mm	
...	...	...	...	...	...
zzzzzz1	OPEN	OPEN	OPEN UPWARD	DISTANCE MOVEMENT 30mm	WEIGHT 100g
zzzzzz2	OPEN	OPEN	OPEN DOWNWARD	DISTANCE MOVEMENT 40mm	WEIGHT 200g
...	...	...	...	...	...

FIG. 90

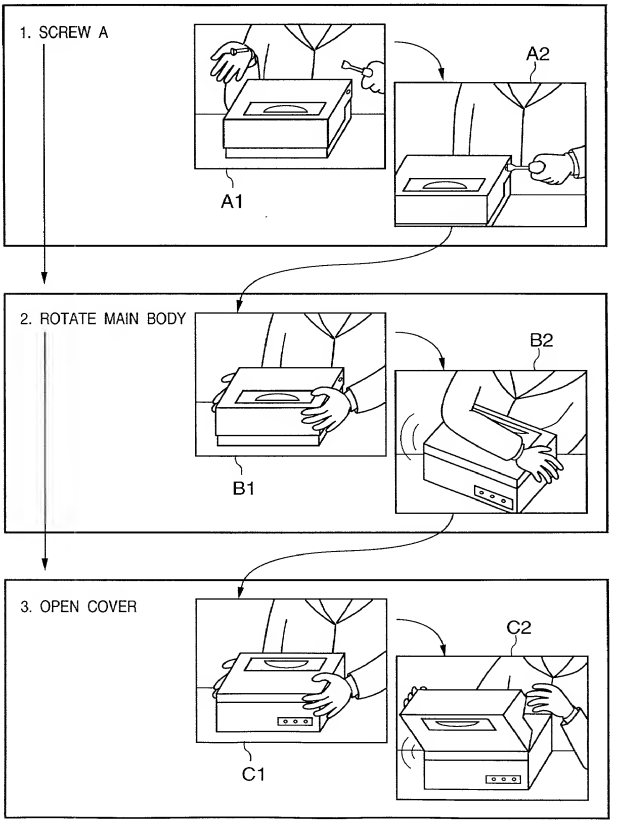


FIG. 91

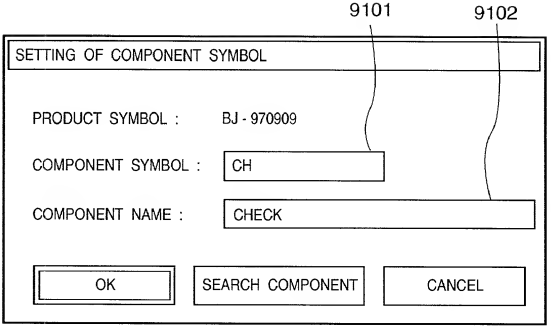

9101
9102
SETTING OF COMPONENT SYMBOL
PRODUCT SYMBOL :
BJ - 970909
COMPONENT SYMBOL :
CH
COMPONENT NAME :
CHECK
OK
SEARCH COMPONENT
CANCEL

FIG. 92

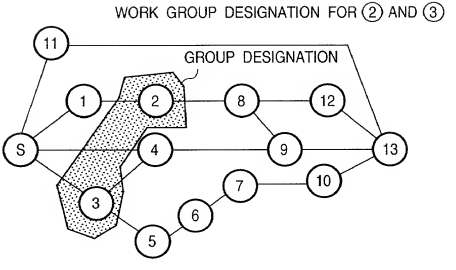

WORK GROUP DESIGNATION FOR ② AND ③
GROUP DESIGNATION
11
1
2
8
12
S
4
9
13
3
7
10
6
5

FIG. 93

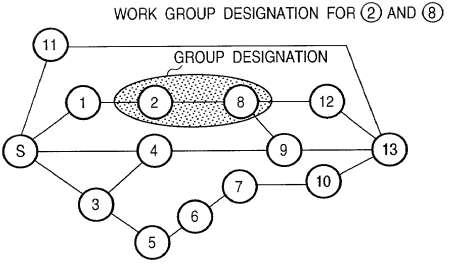

WORK GROUP DESIGNATION FOR ② AND ⑧
GROUP DESIGNATION
11
1
2
8
12
S
4
9
13
7
10
3
6
5

FIG. 94

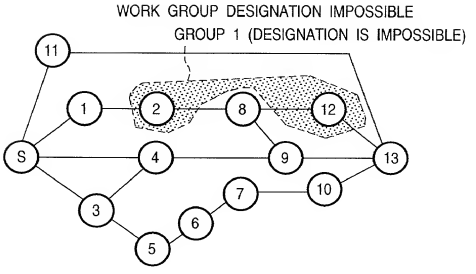
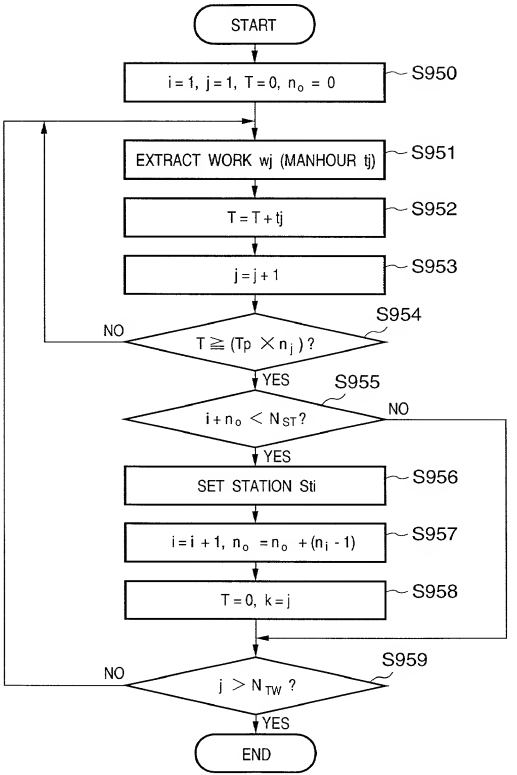
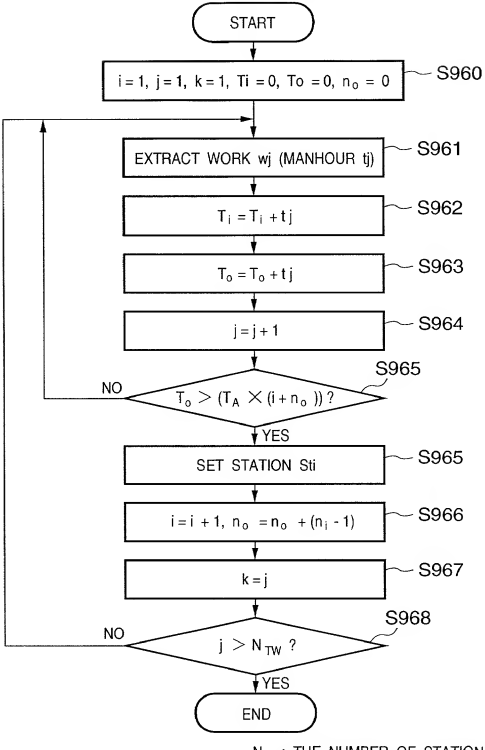

WORK GROUP DESIGNATION IMPOSSIBLE
GROUP 1 (DESIGNATION IS IMPOSSIBLE)
11
1
2
8
12
S
4
9
13
3
7
10
6
5

FIG. 95



N_{ST}: THE NUMBER OF STATIONS
n_i : i STATION PARALLEL NUMBER
n_o : TOTAL ACCUMULATED PARALLEL SUM NUMBER

FIG. 96



N_{ST}: THE NUMBER OF STATIONS
T_i : i STATION MANHOUR
TA : STATION MANHOUR AVERAGE VALUE
$T_A = WF / N_{ST}$
To : TOTAL ACCUMULATED MANHOUR
n_i : i STATION PARALLEL NUMBER
n_o : TOTAL ACCUMULATED PARALLEL SUM NUMBER

FIG. 97

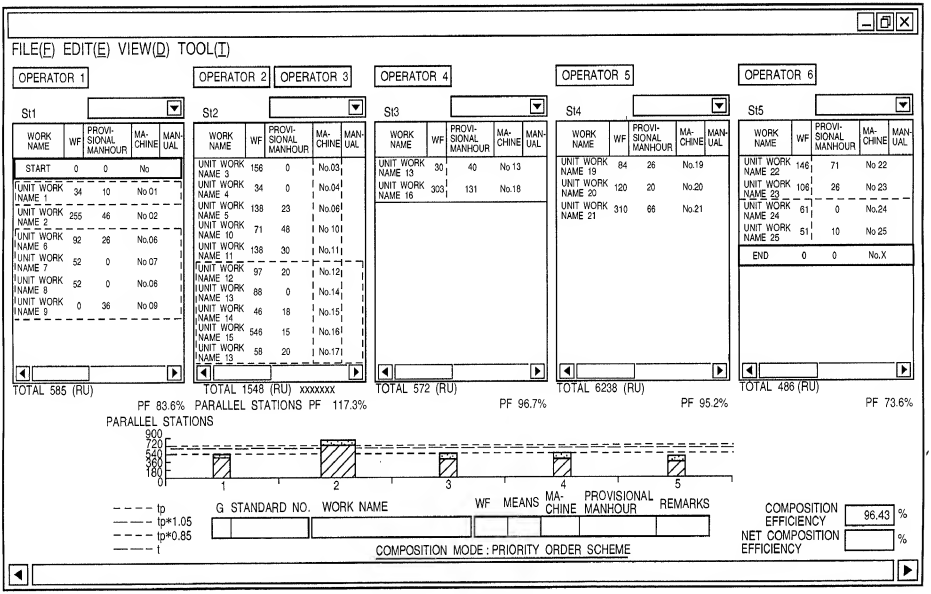

FILE(F) EDIT(E) VIEW(D) TOOL(T)
OPERATOR 1
OPERATOR 2
OPERATOR 3
OPERATOR 4
OPERATOR 5
OPERATOR 6
St1
St2
St3
St4
St5
WORK NAME
WF
PROVISIONAL MANHOUR
MACHINE
MANUAL
START 0 0 No
UNIT WORK NAME 1 34 10 No.01
UNIT WORK NAME 2 255 46 No.02
UNIT WORK NAME 6 92 26 No.06
UNIT WORK NAME 7 52 0 No.07
UNIT WORK NAME 8 52 0 No.08
UNIT WORK NAME 9 0 36 No.09
TOTAL 585 (RU)
UNIT WORK NAME 3 156 0 No.03
UNIT WORK NAME 4 34 0 No.04
UNIT WORK NAME 5 138 23 No.05
UNIT WORK NAME 10 71 46 No.10
UNIT WORK NAME 11 138 30 No.11
UNIT WORK NAME 12 97 20 No.12
UNIT WORK NAME 13 88 0 No.14
UNIT WORK NAME 14 46 18 No.15
UNIT WORK NAME 15 546 15 No.16
UNIT WORK NAME 16 58 20 No.17
TOTAL 1548 (RU) xxxxxxx
UNIT WORK NAME 13 30 40 No.13
UNIT WORK NAME 16 303 131 No.18
TOTAL 572 (RU)
UNIT WORK NAME 19 84 26 No.19
UNIT WORK NAME 20 120 20 No.20
UNIT WORK NAME 21 310 66 No.21
TOTAL 6238 (RU)
UNIT WORK NAME 22 146 71 No.22
UNIT WORK NAME 23 106 26 No.23
UNIT WORK NAME 24 61 0 No.24
UNIT WORK NAME 25 51 10 No.25
END 0 0 No.X
TOTAL 486 (RU)
PF 83.6%
PARALLEL STATIONS PF 117.3%
PF 96.7%
PF 95.2%
PF 73.6%
PARALLEL STATIONS
900
720
540
360
180
0
1
2
3
4
5
tp
tp*1.05
tp*0.85
t
G STANDARD NO. WORK NAME
WF MEANS MACHINE
PROVISIONAL MANHOUR
REMARKS
COMPOSITION MODE : PRIORITY ORDER SCHEME
COMPOSITION EFFICIENCY 96.43 %
NET COMPOSITION EFFICIENCY %

FIG. 98A

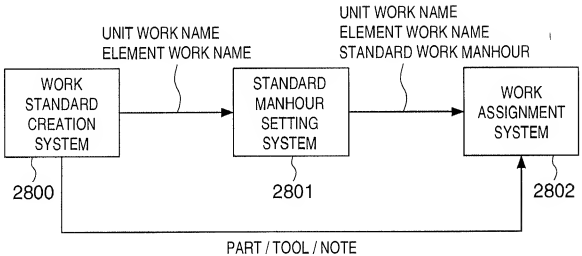

UNIT WORK NAME
ELEMENT WORK NAME
UNIT WORK NAME
ELEMENT WORK NAME
STANDARD WORK MANHOUR
WORK STANDARD CREATION SYSTEM
STANDARD MANHOUR SETTING SYSTEM
WORK ASSIGNMENT SYSTEM
2800
2801
2802
PART / TOOL / NOTE

FIG. 98B

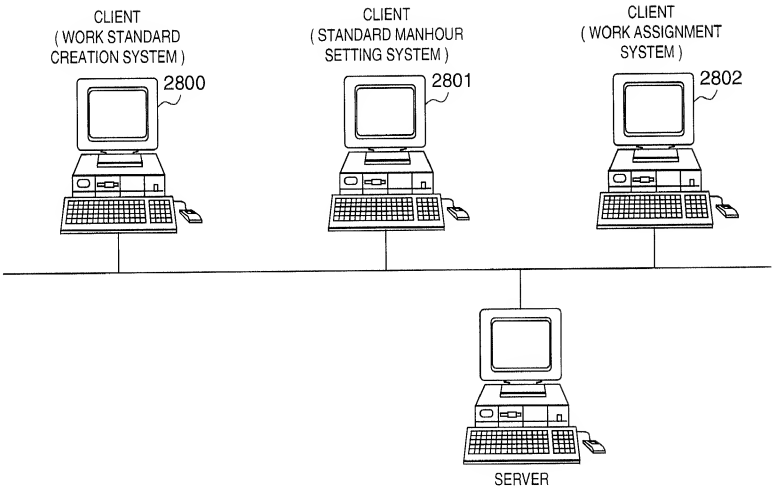
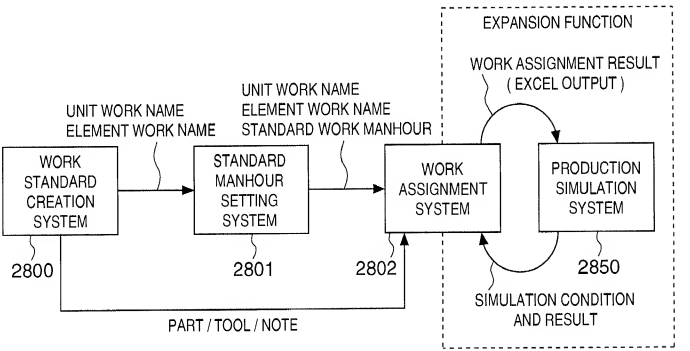

CLIENT
(WORK STANDARD
CREATION SYSTEM)
2800
CLIENT
(STANDARD MANHOUR
SETTING SYSTEM)
2801
CLIENT
(WORK ASSIGNMENT
SYSTEM)
2802
SERVER

FIG. 99A


EXPANSION FUNCTION
WORK ASSIGNMENT RESULT
(EXCEL OUTPUT)
UNIT WORK NAME
ELEMENT WORK NAME
UNIT WORK NAME
ELEMENT WORK NAME
STANDARD WORK MANHOUR
WORK STANDARD CREATION SYSTEM
STANDARD MANHOUR SETTING SYSTEM
WORK ASSIGNMENT SYSTEM
PRODUCTION SIMULATION SYSTEM
2800
2801
2802
2850
SIMULATION CONDITION AND RESULT
PART / TOOL / NOTE

JP2001092760

FIG. 99B

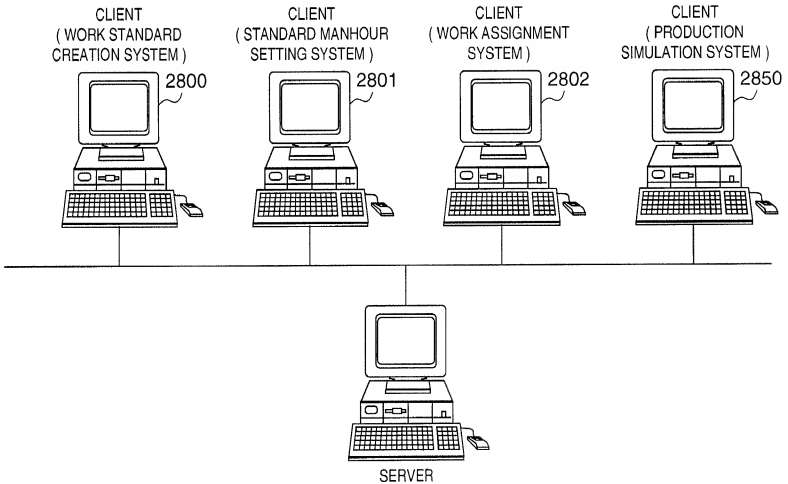


FIG. 100

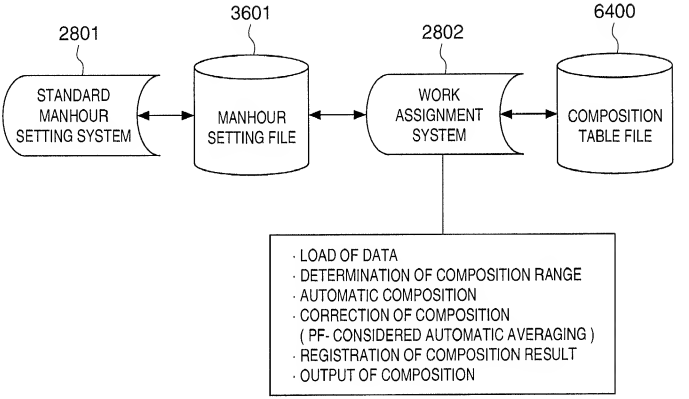

2801
3601
2802
6400
STANDARD MANHOUR SETTING SYSTEM
MANHOUR SETTING FILE
WORK ASSIGNMENT SYSTEM
COMPOSITION TABLE FILE
· LOAD OF DATA
· DETERMINATION OF COMPOSITION RANGE
· AUTOMATIC COMPOSITION
· CORRECTION OF COMPOSITION
(PF- CONSIDERED AUTOMATIC AVERAGING)
· REGISTRATION OF COMPOSITION RESULT
· OUTPUT OF COMPOSITION

FIG. 101

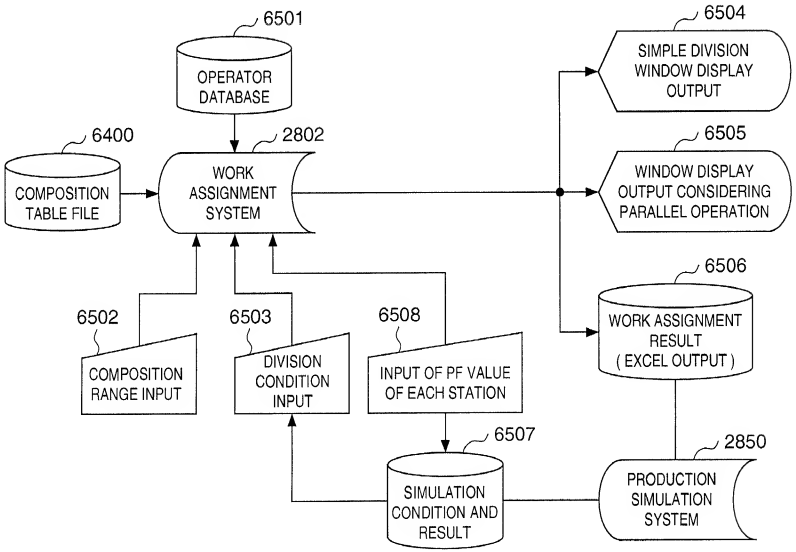
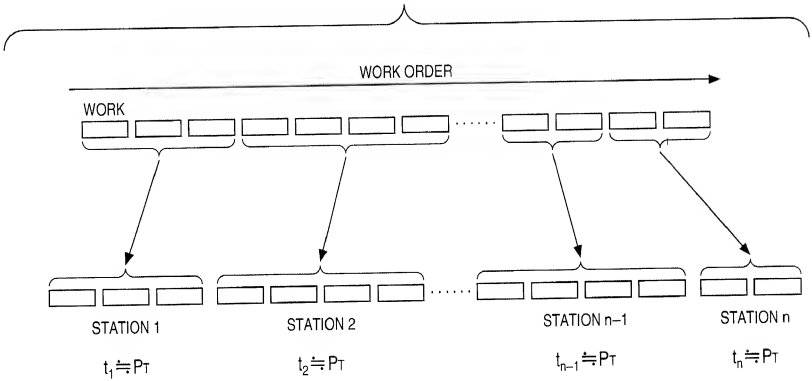

6501
OPERATOR DATABASE
6504
SIMPLE DIVISION WINDOW DISPLAY OUTPUT
6400
COMPOSITION TABLE FILE
2802
WORK ASSIGNMENT SYSTEM
6505
WINDOW DISPLAY OUTPUT CONSIDERING PARALLEL OPERATION
6506
WORK ASSIGNMENT RESULT (EXCEL OUTPUT)
6502
COMPOSITION RANGE INPUT
6503
DIVISION CONDITION INPUT
6508
INPUT OF PF VALUE OF EACH STATION
6507
SIMULATION CONDITION AND RESULT
2850
PRODUCTION SIMULATION SYSTEM

FIG. 102



PT : PITCH TIME
$t_1 \cdots t_T$: STATION MANHOUR

FIG. 103

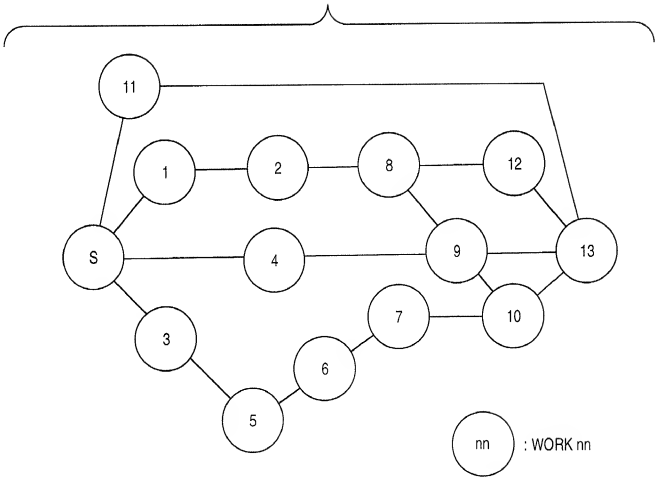


FIG. 104

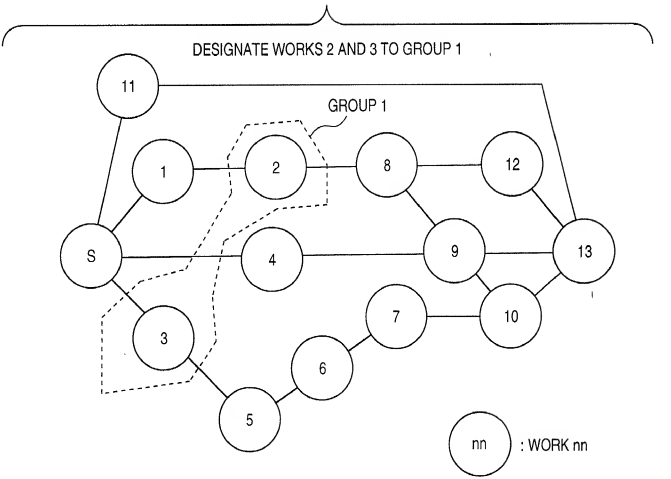
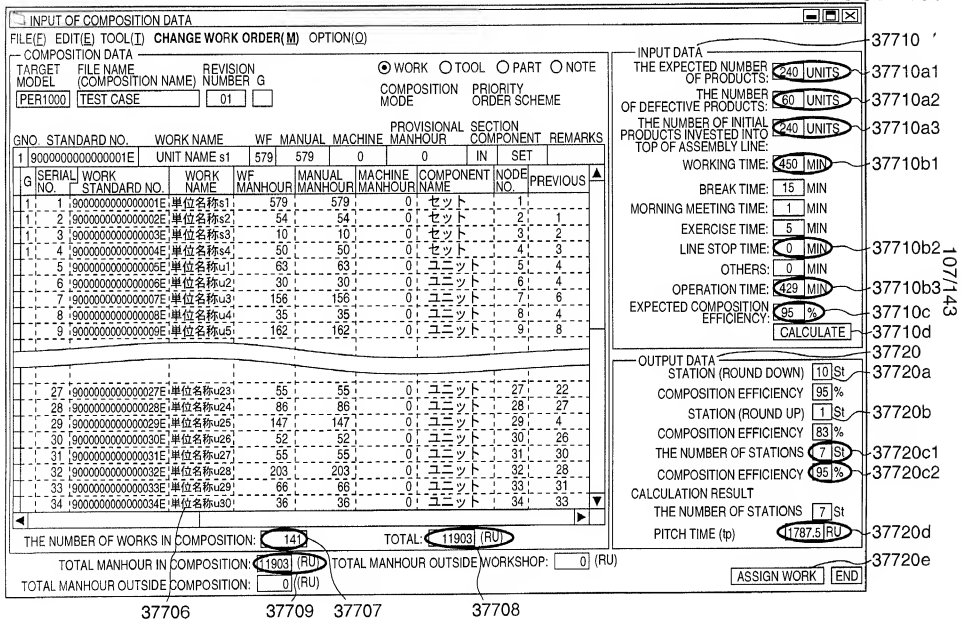

DESIGNATE WORKS 2 AND 3 TO GROUP 1
GROUP 1
11
1
2
8
12
S
4
9
13
7
10
3
6
5
nn
: WORK nn

FIG. 105


INPUT OF COMPOSITION DATA
FILE(F) EDIT(E) TOOL(T) CHANGE WORK ORDER(M) OPTION(O)
COMPOSITION DATA
TARGET MODEL
FILE NAME (COMPOSITION NAME)
REVISION NUMBER
G
PER1000
TEST CASE
01
WORK TOOL PART NOTE
COMPOSITION MODE
PRIORITY ORDER SCHEME
PROVISIONAL SECTION
GNO STANDARD NO. WORK NAME WF MANUAL MACHINE MANHOUR COMPONENT REMARKS
1 900000000000001E UNIT NAME s1 579 579 0 0 IN SET
G SERIAL NO. WORK STANDARD NO. WORK NAME WF MANHOUR MANUAL MANHOUR MACHINE MANHOUR COMPONENT NAME NODE NO. PREVIOUS
1 1 900000000000001E 単位名称s1 579 579 0 セット 1
1 2 900000000000002E 単位名称s2 54 54 0 セット 2 1
1 3 900000000000003E 単位名称s3 10 10 0 セット 3 2
1 4 900000000000004E 単位名称s4 50 50 0 セット 4 3
1 5 900000000000005E 単位名称u1 63 63 0 ユニット 5 4
1 6 900000000000006E 単位名称u2 30 30 0 ユニット 6 4
1 7 900000000000007E 単位名称u3 156 156 0 ユニット 7 6
1 8 900000000000008E 単位名称u4 35 35 0 ユニット 8 4
1 9 900000000000009E 単位名称u5 162 162 0 ユニット 9 8
1 27 900000000000027E 単位名称u23 55 55 0 ユニット 27 22
1 28 900000000000028E 単位名称u24 86 86 0 ユニット 28 27
1 29 900000000000029E 単位名称u25 147 147 0 ユニット 29 4
1 30 900000000000030E 単位名称u26 52 52 0 ユニット 30 26
1 31 900000000000031E 単位名称u27 55 55 0 ユニット 31 30
1 32 900000000000032E 単位名称u28 203 203 0 ユニット 32 28
1 33 900000000000033E 単位名称u29 66 66 0 ユニット 33 31
1 34 900000000000034E 単位名称u30 36 36 0 ユニット 34 33
THE NUMBER OF WORKS IN COMPOSITION: 141
TOTAL: 11903 (RU)
TOTAL MANHOUR IN COMPOSITION: 11903 (RU)
TOTAL MANHOUR OUTSIDE WORKSHOP: 0 (RU)
TOTAL MANHOUR OUTSIDE COMPOSITION: 0 (RU)
INPUT DATA
THE EXPECTED NUMBER OF PRODUCTS: 240 UNITS
THE NUMBER OF DEFECTIVE PRODUCTS: 60 UNITS
THE NUMBER OF INITIAL PRODUCTS INVESTED INTO TOP OF ASSEMBLY LINE: 240 UNITS
WORKING TIME: 450 MIN
BREAK TIME: 15 MIN
MORNING MEETING TIME: 1 MIN
EXERCISE TIME: 5 MIN
LINE STOP TIME: 0 MIN
OTHERS: 0 MIN
OPERATION TIME: 429 MIN
EXPECTED COMPOSITION EFFICIENCY: 95 %
CALCULATE
OUTPUT DATA
STATION (ROUND DOWN) 10 St
COMPOSITION EFFICIENCY 95 %
STATION (ROUND UP) 1 St
COMPOSITION EFFICIENCY 83 %
THE NUMBER OF STATIONS 7 St
COMPOSITION EFFICIENCY 95 %
CALCULATION RESULT
THE NUMBER OF STATIONS 7 St
PITCH TIME (tp) 1787.5 RU
ASSIGN WORK
END
37710
37710a1
37710a2
37710a3
37710b1
37710b2
37710b3
37710c
37710d
37720
37720a
37720b
37720c1
37720c2
37720d
37720e
37706
37709
37707
37708

PRINTED BY JPO

FIG. 106

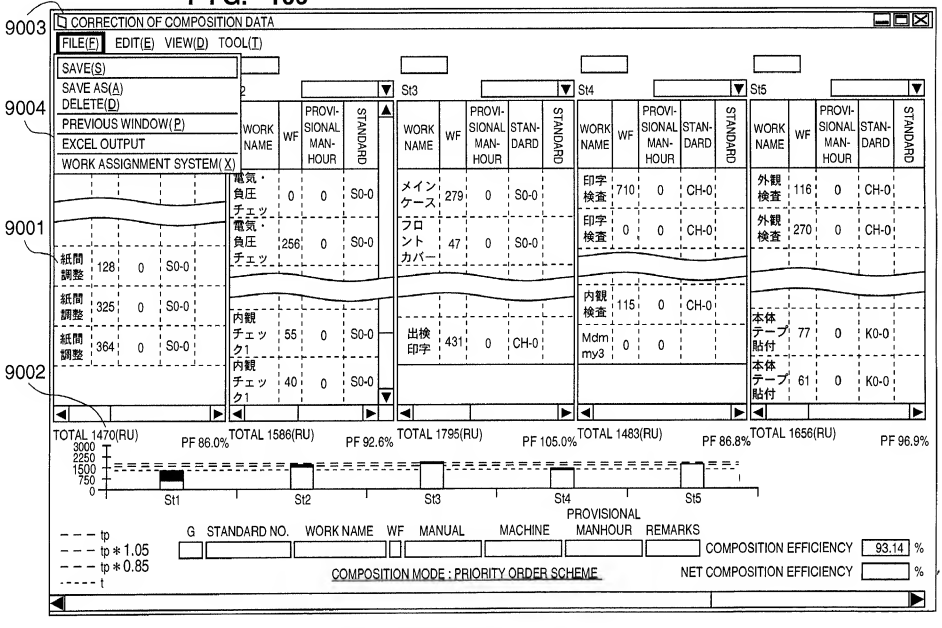


FIG. 107

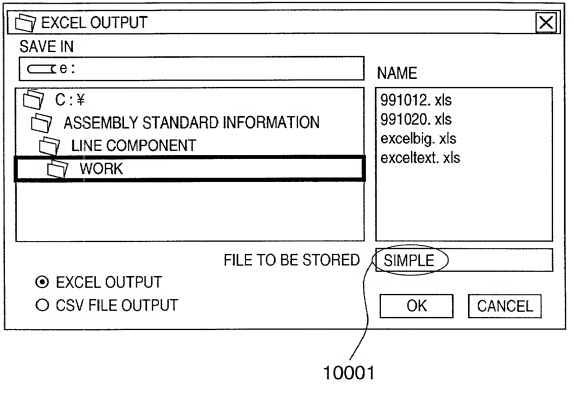

EXCEL OUTPUT
SAVE IN
e:
C:¥
ASSEMBLY STANDARD INFORMATION
LINE COMPONENT
WORK
NAME
991012. xls
991020. xls
excelbig. xls
exceltext. xls
FILE TO BE STORED
SIMPLE
EXCEL OUTPUT
CSV FILE OUTPUT
OK
CANCEL
10001

FIG. 108

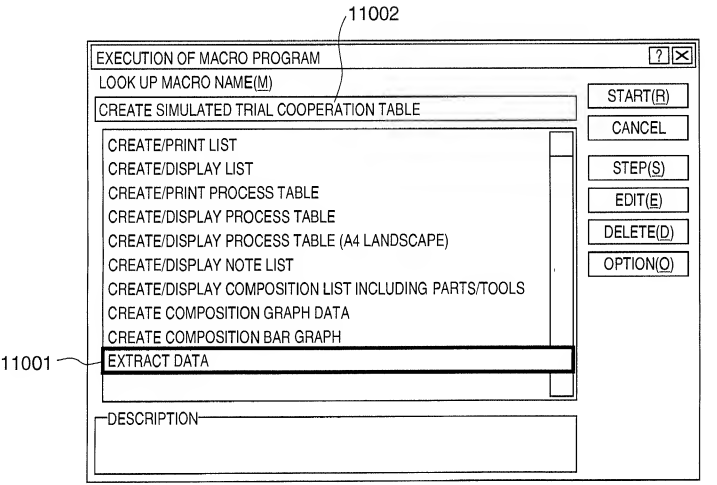

11002
EXECUTION OF MACRO PROGRAM
LOOK UP MACRO NAME(M)
CREATE SIMULATED TRIAL COOPERATION TABLE
START(R)
CANCEL
STEP(S)
EDIT(E)
DELETE(D)
OPTION(O)
CREATE/PRINT LIST
CREATE/DISPLAY LIST
CREATE/PRINT PROCESS TABLE
CREATE/DISPLAY PROCESS TABLE
CREATE/DISPLAY PROCESS TABLE (A4 LANDSCAPE)
CREATE/DISPLAY NOTE LIST
CREATE/DISPLAY COMPOSITION LIST INCLUDING PARTS/TOOLS
CREATE COMPOSITION GRAPH DATA
CREATE COMPOSITION BAR GRAPH
11001
EXTRACT DATA
DESCRIPTION

FIG. 109

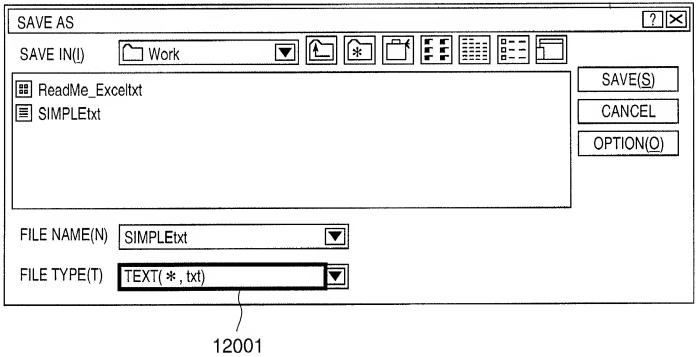

SAVE AS
SAVE IN(I)
Work
ReadMe_Exceltxt
SIMPLEtxt
SAVE(S)
CANCEL
OPTION(O)
FILE NAME(N)
SIMPLEtxt
FILE TYPE(T)
TEXT(*, txt)
12001

FIG. 110

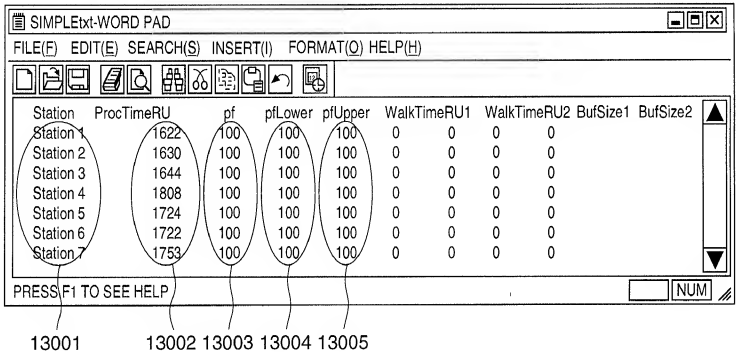

SIMPLEtxt-WORD PAD
FILE(F) EDIT(E) SEARCH(S) INSERT(I) FORMAT(O) HELP(H)
Station ProcTimeRU pf pfLower pfUpper WalkTimeRU1 WalkTimeRU2 BufSize1 BufSize2
Station 1 1622 100 100 100 0 0 0 0
Station 2 1630 100 100 100 0 0 0 0
Station 3 1644 100 100 100 0 0 0 0
Station 4 1808 100 100 100 0 0 0 0
Station 5 1724 100 100 100 0 0 0 0
Station 6 1722 100 100 100 0 0 0 0
Station 7 1753 100 100 100 0 0 0 0
PRESS F1 TO SEE HELP
NUM
13001
13002 13003 13004 13005

FIG. 111

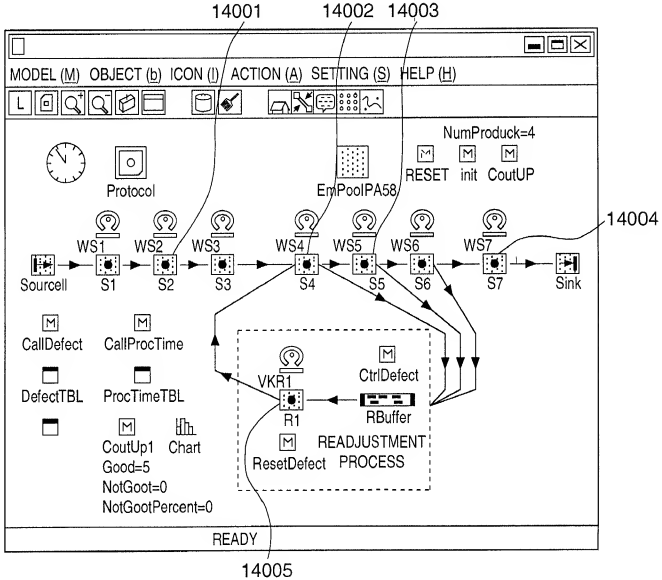
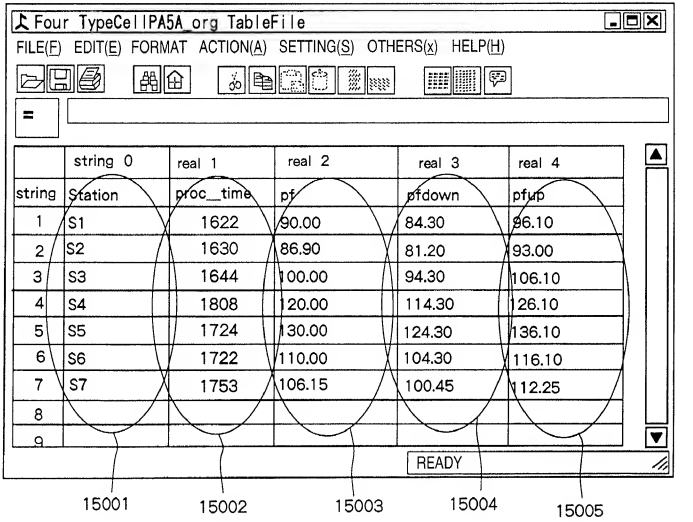

14001
14002
14003
MODEL (M) OBJECT (b) ICON (I) ACTION (A) SETTING (S) HELP (H)
NumProduck=4
RESET
init
CoutUP
Protocol
EmPoolPA58
14004
WS1
WS2
WS3
WS4
WS5
WS6
WS7
Sourcell
S1
S2
S3
S4
S5
S6
S7
Sink
CallDefect
CallProcTime
DefectTBL
ProcTimeTBL
VKR1
CtrlDefect
R1
RBuffer
READJUSTMENT
PROCESS
ResetDefect
CoutUp1
Chart
Good=5
NotGoot=0
NotGootPercent=0
READY
14005

FIG. 112



	string 0	real 1	real 2	real 3	real 4
string	Station	proc_time	pf	pfdown	pfup
1	S1	1622	90.00	84.30	96.10
2	S2	1630	86.90	81.20	93.00
3	S3	1644	100.00	94.30	106.10
4	S4	1808	120.00	114.30	126.10
5	S5	1724	130.00	124.30	136.10
6	S6	1722	110.00	104.30	116.10
7	S7	1753	106.15	100.45	112.25
8					
9					

FIG. 113

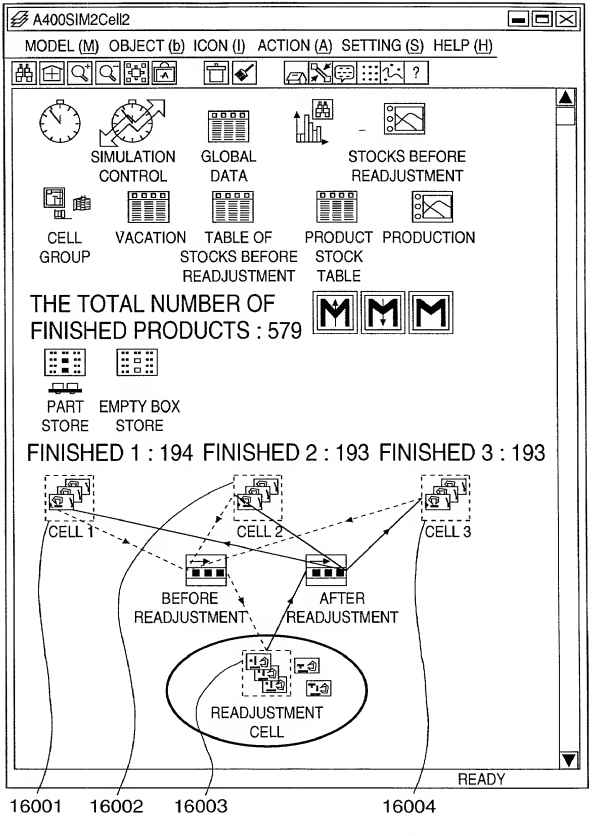

A400SIM2Cell2
MODEL (M) OBJECT (b) ICON (I) ACTION (A) SETTING (S) HELP (H)
SIMULATION CONTROL
GLOBAL DATA
STOCKS BEFORE READJUSTMENT
CELL GROUP
VACATION
TABLE OF STOCKS BEFORE READJUSTMENT
PRODUCT STOCK TABLE
PRODUCTION
THE TOTAL NUMBER OF FINISHED PRODUCTS : 579
PART STORE
EMPTY BOX STORE
FINISHED 1 : 194 FINISHED 2 : 193 FINISHED 3 : 193
CELL 1
CELL 2
CELL 3
BEFORE READJUSTMENT
AFTER READJUSTMENT
READJUSTMENT CELL
READY
16001
16002
16003
16004

FIG. 114A

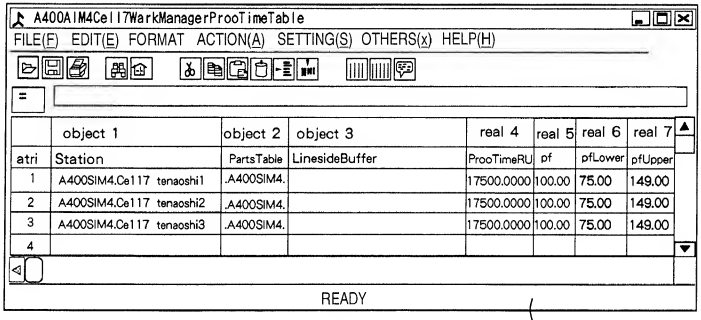

A400AIM4Cell7WarkManagerProoTimeTable
FILE(F) EDIT(E) FORMAT ACTION(A) SETTING(S) OTHERS(x) HELP(H)
=
object 1 | object 2 | object 3 | real 4 | real 5 | real 6 | real 7
atri | Station | PartsTable | LinesideBuffer | ProoTimeRU | pf | pfLower | pfUpper
1 | A400SIM4.Ce117 tenaoshi1 | .A400SIM4. | | 17500.0000 | 100.00 | 75.00 | 149.00
2 | A400SIM4.Ce117 tenaoshi2 | .A400SIM4. | | 17500.0000 | 100.00 | 75.00 | 149.00
3 | A400SIM4.Ce117 tenaoshi3 | .A400SIM4. | | 17500.0000 | 100.00 | 75.00 | 149.00
4
READY
17002

FIG. 114B

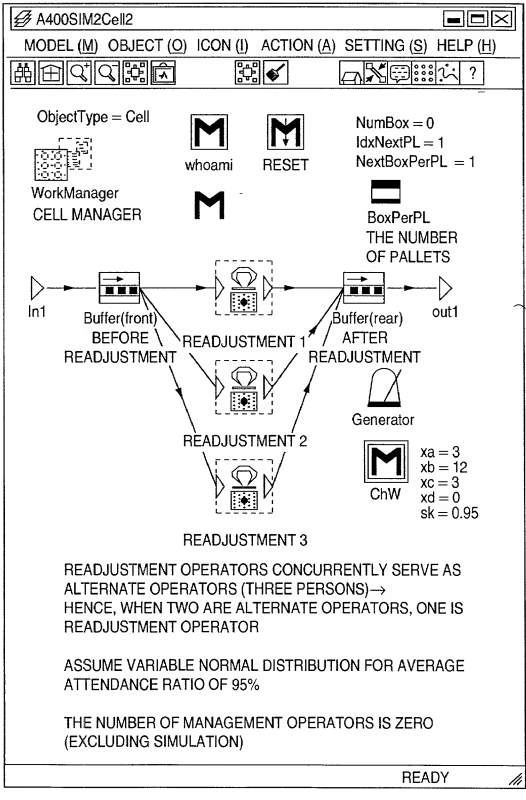

A400SIM2Cell2
MODEL (M) OBJECT (O) ICON (I) ACTION (A) SETTING (S) HELP (H)
ObjectType = Cell
whoami
RESET
NumBox = 0
IdxNextPL = 1
NextBoxPerPL = 1
WorkManager
CELL MANAGER
BoxPerPL
THE NUMBER
OF PALLETS
In1
Buffer(front)
BEFORE
READJUSTMENT
READJUSTMENT 1
Buffer(rear)
AFTER
READJUSTMENT
out1
17001
Generator
READJUSTMENT 2
ChW
xa = 3
xb = 12
xc = 3
xd = 0
sk = 0.95
READJUSTMENT 3
READJUSTMENT OPERATORS CONCURRENTLY SERVE AS ALTERNATE OPERATORS (THREE PERSONS)→ HENCE, WHEN TWO ARE ALTERNATE OPERATORS, ONE IS READJUSTMENT OPERATOR
ASSUME VARIABLE NORMAL DISTRIBUTION FOR AVERAGE ATTENDANCE RATIO OF 95%
THE NUMBER OF MANAGEMENT OPERATORS IS ZERO (EXCLUDING SIMULATION)
READY

FIG. 115

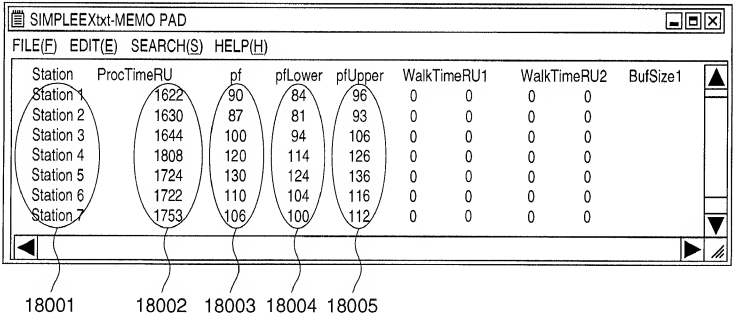

SIMPLEEXtxt-MEMO PAD
FILE(F) EDIT(E) SEARCH(S) HELP(H)
Station ProcTimeRU pf pfLower pfUpper WalkTimeRU1 WalkTimeRU2 BufSize1
Station 1 1622 90 84 96 0 0 0 0
Station 2 1630 87 81 93 0 0 0 0
Station 3 1644 100 94 106 0 0 0 0
Station 4 1808 120 114 126 0 0 0 0
Station 5 1724 130 124 136 0 0 0 0
Station 6 1722 110 104 116 0 0 0 0
Station 7 1753 106 100 112 0 0 0 0
18001
18002
18003
18004
18005

FIG. 116

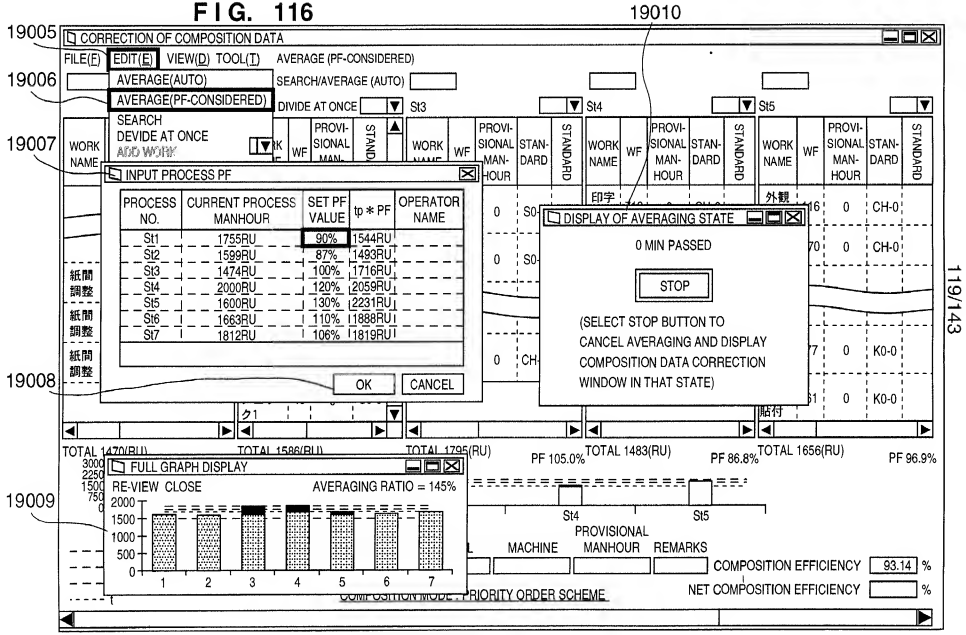

19005
19006
19007
19008
19009
19010
CORRECTION OF COMPOSITION DATA
FILE(F) EDIT(E) VIEW(D) TOOL(T) AVERAGE (PF-CONSIDERED)
AVERAGE(AUTO)
AVERAGE(PF-CONSIDERED)
SEARCH
DEVIDE AT ONCE
ADD WORK
SEARCH/AVERAGE (AUTO)
DIVIDE AT ONCE
St3
St4
St5
WORK NAME
WF
PROVISIONAL MANHOUR
STANDARD
INPUT PROCESS PF
PROCESS NO.
CURRENT PROCESS MANHOUR
SET PF VALUE
tp * PF
OPERATOR NAME
St1 1755RU 90% 1544RU
St2 1599RU 87% 1493RU
St3 1474RU 100% 1716RU
St4 2000RU 120% 2059RU
St5 1600RU 130% 2231RU
St6 1663RU 110% 1888RU
St7 1812RU 106% 1819RU
OK
CANCEL
DISPLAY OF AVERAGING STATE
0 MIN PASSED
STOP
(SELECT STOP BUTTON TO CANCEL AVERAGING AND DISPLAY COMPOSITION DATA CORRECTION WINDOW IN THAT STATE)
FULL GRAPH DISPLAY
RE-VIEW CLOSE
AVERAGING RATIO = 145%
TOTAL 1470(RU)
TOTAL 1586(RU)
TOTAL 1795(RU)
PF 105.0%
TOTAL 1483(RU)
PF 86.8%
TOTAL 1656(RU)
PF 96.9%
MACHINE
PROVISIONAL MANHOUR
REMARKS
COMPOSITION EFFICIENCY 93.14 %
NET COMPOSITION EFFICIENCY %
COMPOSITION MODE : PRIORITY ORDER SCHEME

FIG. 117A

BEFORE PF-CONSIDERED AUTOMATIC AVERAGING

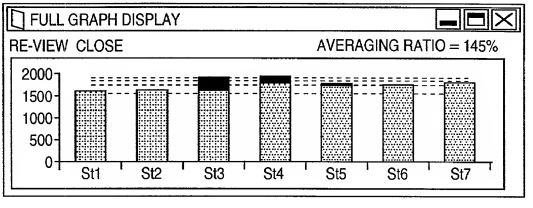


FIG. 117B

AFTER PF-CONSIDERED AUTOMATIC AVERAGING

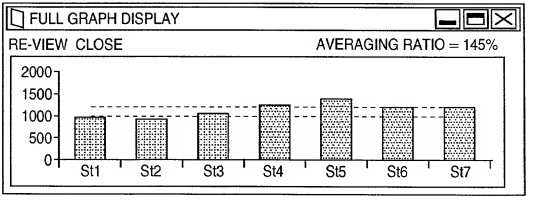


FIG. 118A

BEFORE PF-CONSIDERED AUTOMATIC AVERAGING

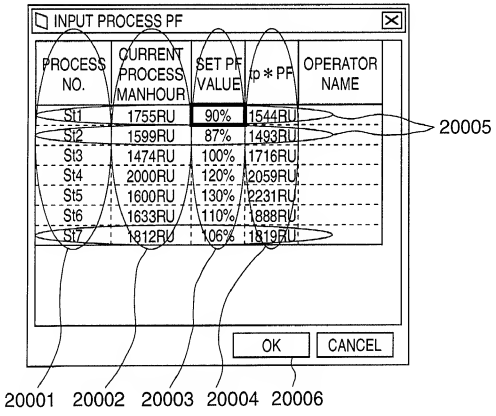


FIG. 118B

AFTER PF-CONSIDERED AUTOMATIC AVERAGING

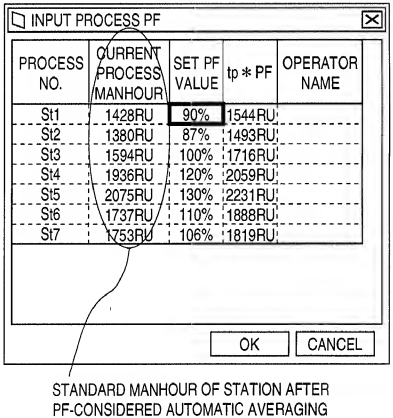
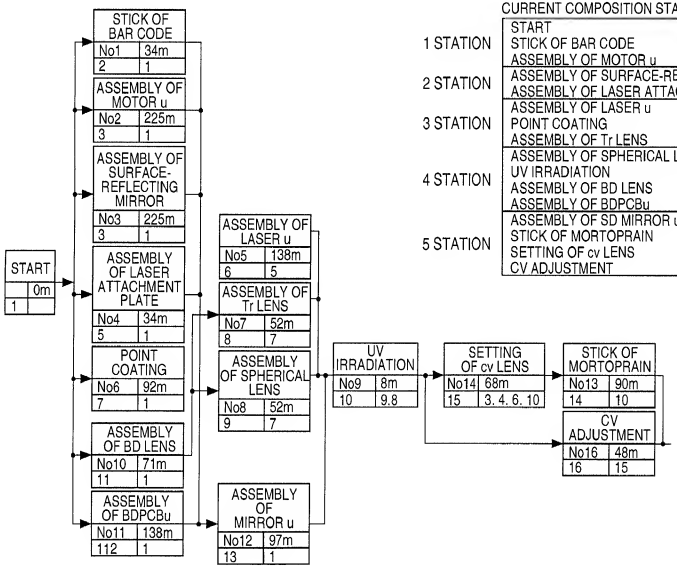


FIG. 119



CURRENT COMPOSITION STATE

1 STATION	START	0RU	st 1
	STICK OF BAR CODE	34RU	st 1
	ASSEMBLY OF MOTOR u	225RU	st 1
2 STATION	ASSEMBLY OF SURFACE-REFLECTING MIRROR	156RU	st 2
	ASSEMBLY OF LASER ATTACHMENT PLATE	34RU	st 2
3 STATION	ASSEMBLY OF LASER u	138RU	st 3
	POINT COATING	92RU	st 3
	ASSEMBLY OF Tr LENS	52RU	st 3
4 STATION	ASSEMBLY OF SPHERICAL LENS	52RU	st 4
	UV IRRADIATION	8RU	st 4
	ASSEMBLY OF BD LENS	71RU	st 4
	ASSEMBLY OF BDPCBu	138RU	st 4
5 STATION	ASSEMBLY OF SD MIRROR u	97RU	st 4
	STICK OF MORTOPRAIN	90RU	st 5
	SETTING OF cv LENS	36RU	st 5
	CV ADJUSTMENT	48RU	st 5

FIG. 120

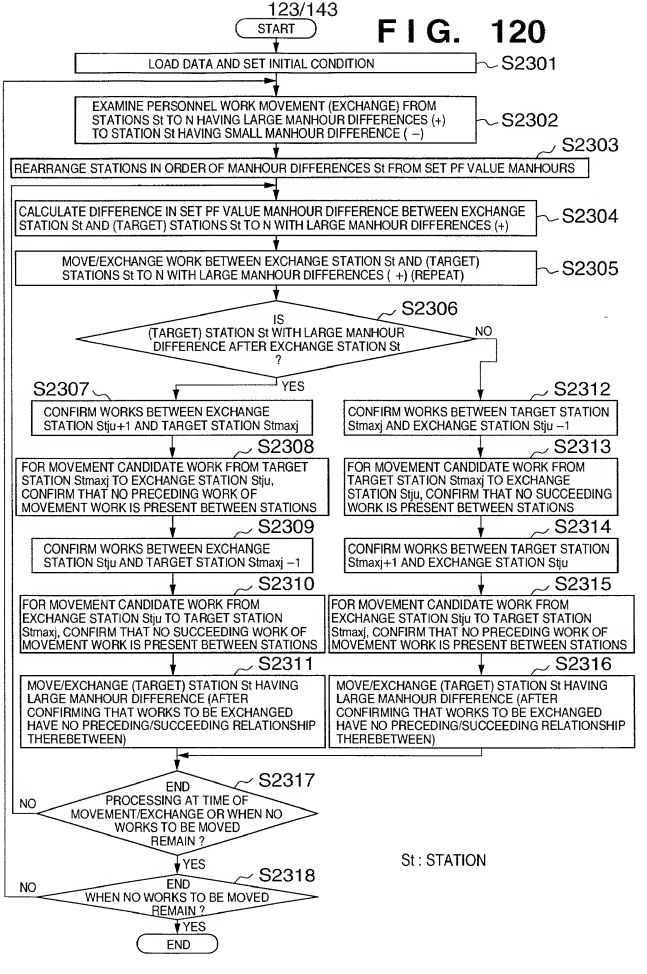

START
LOAD DATA AND SET INITIAL CONDITION
S2301
EXAMINE PERSONNEL WORK MOVEMENT (EXCHANGE) FROM STATIONS St TO N HAVING LARGE MANHOUR DIFFERENCES (+) TO STATION St HAVING SMALL MANHOUR DIFFERENCE (−)
S2302
S2303
REARRANGE STATIONS IN ORDER OF MANHOUR DIFFERENCES St FROM SET PF VALUE MANHOURS
CALCULATE DIFFERENCE IN SET PF VALUE MANHOUR DIFFERENCE BETWEEN EXCHANGE STATION St AND (TARGET) STATIONS St TO N WITH LARGE MANHOUR DIFFERENCES (+)
S2304
MOVE/EXCHANGE WORK BETWEEN EXCHANGE STATION St AND (TARGET) STATIONS St TO N WITH LARGE MANHOUR DIFFERENCES (+) (REPEAT)
S2305
S2306
IS (TARGET) STATION St WITH LARGE MANHOUR DIFFERENCE AFTER EXCHANGE STATION St ?
NO
YES
S2307
CONFIRM WORKS BETWEEN EXCHANGE STATION Stju+1 AND TARGET STATION Stmaxj
S2308
FOR MOVEMENT CANDIDATE WORK FROM TARGET STATION Stmaxj TO EXCHANGE STATION Stju, CONFIRM THAT NO PRECEDING WORK OF MOVEMENT WORK IS PRESENT BETWEEN STATIONS
S2309
CONFIRM WORKS BETWEEN EXCHANGE STATION Stju AND TARGET STATION Stmaxj −1
S2310
FOR MOVEMENT CANDIDATE WORK FROM EXCHANGE STATION Stju TO TARGET STATION Stmaxj, CONFIRM THAT NO SUCCEEDING WORK OF MOVEMENT WORK IS PRESENT BETWEEN STATIONS
S2311
MOVE/EXCHANGE (TARGET) STATION St HAVING LARGE MANHOUR DIFFERENCE (AFTER CONFIRMING THAT WORKS TO BE EXCHANGED HAVE NO PRECEDING/SUCCEEDING RELATIONSHIP THEREBETWEEN)
S2312
CONFIRM WORKS BETWEEN TARGET STATION Stmaxj AND EXCHANGE STATION Stju −1
S2313
FOR MOVEMENT CANDIDATE WORK FROM TARGET STATION Stmaxj TO EXCHANGE STATION Stju, CONFIRM THAT NO SUCCEEDING WORK IS PRESENT BETWEEN STATIONS
S2314
CONFIRM WORKS BETWEEN TARGET STATION Stmaxj+1 AND EXCHANGE STATION Stju
S2315
FOR MOVEMENT CANDIDATE WORK FROM EXCHANGE STATION Stju TO TARGET STATION Stmaxj, CONFIRM THAT NO PRECEDING WORK OF MOVEMENT WORK IS PRESENT BETWEEN STATIONS
S2316
MOVE/EXCHANGE (TARGET) STATION St HAVING LARGE MANHOUR DIFFERENCE (AFTER CONFIRMING THAT WORKS TO BE EXCHANGED HAVE NO PRECEDING/SUCCEEDING RELATIONSHIP THEREBETWEEN)
S2317
END PROCESSING AT TIME OF MOVEMENT/EXCHANGE OR WHEN NO WORKS TO BE MOVED REMAIN ?
NO
YES
S2318
END WHEN NO WORKS TO BE MOVED REMAIN ?
NO
YES
END
St : STATION

FIG. 121

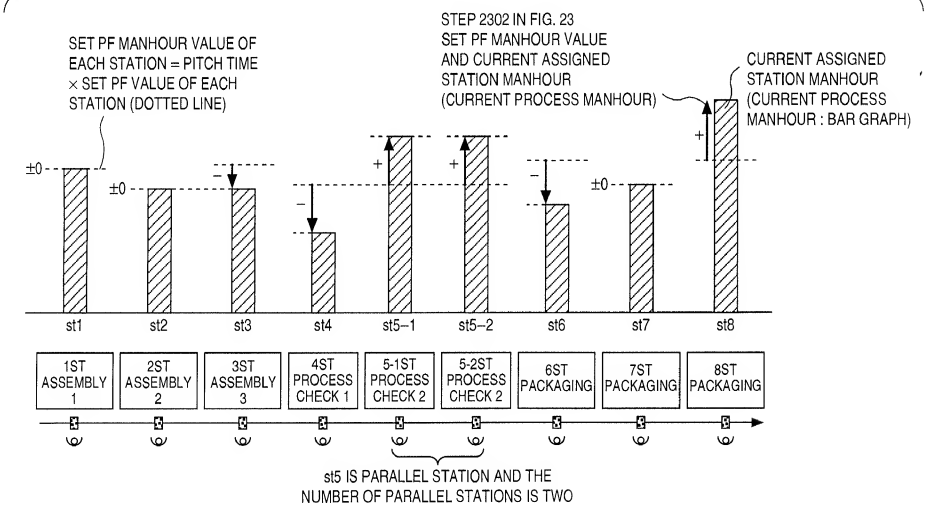

SET PF MANHOUR VALUE OF EACH STATION = PITCH TIME × SET PF VALUE OF EACH STATION (DOTTED LINE)
STEP 2302 IN FIG. 23 SET PF MANHOUR VALUE AND CURRENT ASSIGNED STATION MANHOUR (CURRENT PROCESS MANHOUR)
CURRENT ASSIGNED STATION MANHOUR (CURRENT PROCESS MANHOUR : BAR GRAPH)
±0
±0
±0
st1
st2
st3
st4
st5–1
st5–2
st6
st7
st8
1ST ASSEMBLY 1
2ST ASSEMBLY 2
3ST ASSEMBLY 3
4ST PROCESS CHECK 1
5-1ST PROCESS CHECK 2
5-2ST PROCESS CHECK 2
6ST PACKAGING
7ST PACKAGING
8ST PACKAGING
st5 IS PARALLEL STATION AND THE NUMBER OF PARALLEL STATIONS IS TWO

FIG. 122

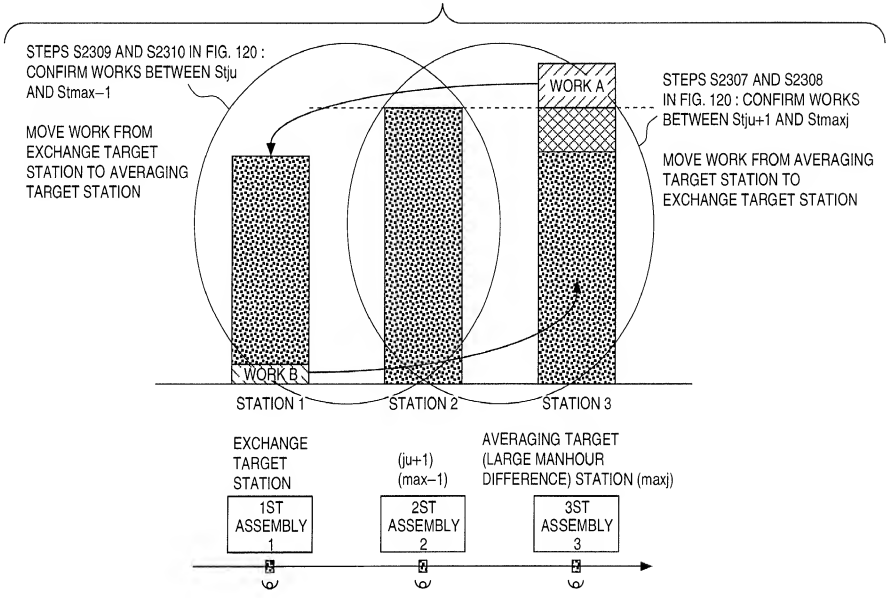

STEPS S2309 AND S2310 IN FIG. 120 : CONFIRM WORKS BETWEEN Stju AND Stmax−1
MOVE WORK FROM EXCHANGE TARGET STATION TO AVERAGING TARGET STATION
WORK A
STEPS S2307 AND S2308 IN FIG. 120 : CONFIRM WORKS BETWEEN Stju+1 AND Stmaxj
MOVE WORK FROM AVERAGING TARGET STATION TO EXCHANGE TARGET STATION
WORK B
STATION 1
STATION 2
STATION 3
EXCHANGE TARGET STATION
(ju+1) (max−1)
AVERAGING TARGET (LARGE MANHOUR DIFFERENCE) STATION (maxj)
1ST ASSEMBLY 1
2ST ASSEMBLY 2
3ST ASSEMBLY 3

FIG. 123

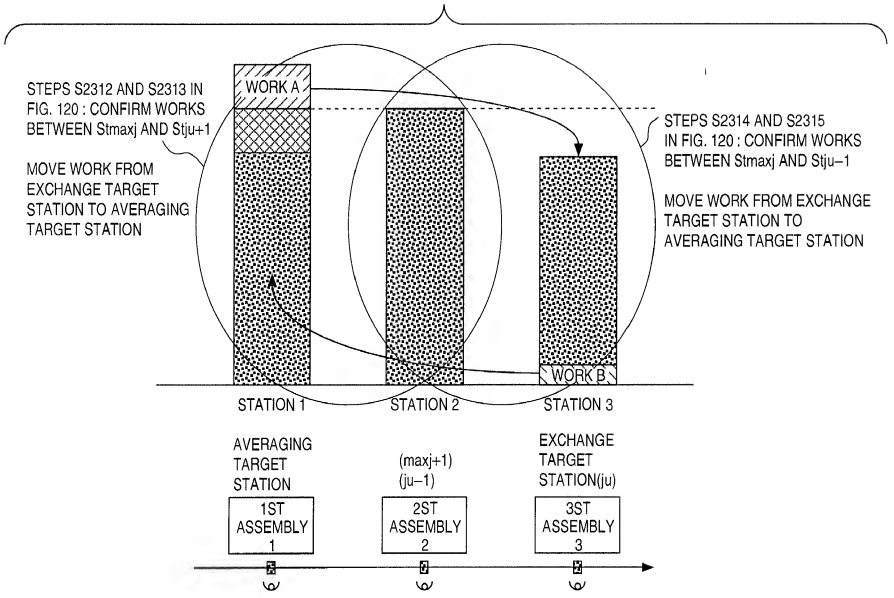

STEPS S2312 AND S2313 IN FIG. 120 : CONFIRM WORKS BETWEEN Stmaxj AND Stju+1
MOVE WORK FROM EXCHANGE TARGET STATION TO AVERAGING TARGET STATION
WORK A
WORK B
STEPS S2314 AND S2315 IN FIG. 120 : CONFIRM WORKS BETWEEN Stmaxj AND Stju−1
MOVE WORK FROM EXCHANGE TARGET STATION TO AVERAGING TARGET STATION
STATION 1
STATION 2
STATION 3
AVERAGING TARGET STATION
(maxj+1) (ju−1)
EXCHANGE TARGET STATION(ju)
1ST ASSEMBLY 1
2ST ASSEMBLY 2
3ST ASSEMBLY 3

FIG. 124

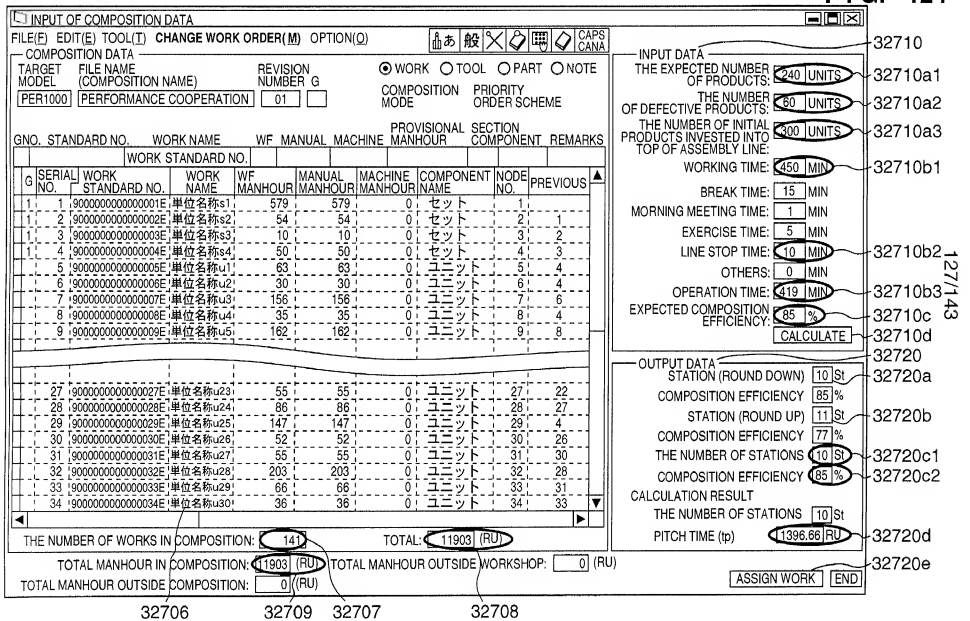

INPUT OF COMPOSITION DATA
FILE(F) EDIT(E) TOOL(T) CHANGE WORK ORDER(M) OPTION(O)
COMPOSITION DATA
TARGET MODEL
FILE NAME (COMPOSITION NAME)
REVISION NUMBER
G
PER1000
PERFORMANCE COOPERATION
01
WORK TOOL PART NOTE
COMPOSITION MODE
PRIORITY ORDER SCHEME
PROVISIONAL SECTION
GNO. STANDARD NO. WORK NAME WF MANUAL MACHINE MANHOUR COMPONENT REMARKS
WORK STANDARD NO.
G SERIAL NO. WORK STANDARD NO. WORK NAME WF MANHOUR MANUAL MANHOUR MACHINE MANHOUR COMPONENT NAME NODE NO. PREVIOUS
1 1 900000000000001E 単位名称s1 579 579 0 セット 1
1 2 900000000000002E 単位名称s2 54 54 0 セット 2 1
1 3 900000000000003E 単位名称s3 10 10 0 セット 3 2
1 4 900000000000004E 単位名称s4 50 50 0 セット 4 3
1 5 900000000000005E 単位名称u1 63 63 0 ユニット 5 4
1 6 900000000000006E 単位名称u2 30 30 0 ユニット 6 4
1 7 900000000000007E 単位名称u3 156 156 0 ユニット 7 6
1 8 900000000000008E 単位名称u4 35 35 0 ユニット 8 4
1 9 900000000000009E 単位名称u5 162 162 0 ユニット 9 8
1 27 90000000000027E 単位名称u23 55 55 0 ユニット 27 22
1 28 90000000000028E 単位名称u24 86 86 0 ユニット 28 27
1 29 90000000000029E 単位名称u25 147 147 0 ユニット 29 4
1 30 9000000000030E 単位名称u26 52 52 0 ユニット 30 26
1 31 90000000000031E 単位名称u27 55 55 0 ユニット 31 30
1 32 90000000000032E 単位名称u28 203 203 0 ユニット 32 28
1 33 90000000000033E 単位名称u29 66 66 0 ユニット 33 31
1 34 90000000000034E 単位名称u30 36 36 0 ユニット 34 33
THE NUMBER OF WORKS IN COMPOSITION: 141
TOTAL: 11903 (RU)
TOTAL MANHOUR IN COMPOSITION: 11903 (RU)
TOTAL MANHOUR OUTSIDE WORKSHOP: 0 (RU)
TOTAL MANHOUR OUTSIDE COMPOSITION: 0 (RU)
INPUT DATA
THE EXPECTED NUMBER OF PRODUCTS: 240 UNITS
THE NUMBER OF DEFECTIVE PRODUCTS: 60 UNITS
THE NUMBER OF INITIAL PRODUCTS INVESTED INTO TOP OF ASSEMBLY LINE: 300 UNITS
WORKING TIME: 450 MIN
BREAK TIME: 15 MIN
MORNING MEETING TIME: 1 MIN
EXERCISE TIME: 5 MIN
LINE STOP TIME: 10 MIN
OTHERS: 0 MIN
OPERATION TIME: 419 MIN
EXPECTED COMPOSITION EFFICIENCY: 85 %
CALCULATE
OUTPUT DATA
STATION (ROUND DOWN) 10 St
COMPOSITION EFFICIENCY 85 %
STATION (ROUND UP) 11 St
COMPOSITION EFFICIENCY 77 %
THE NUMBER OF STATIONS 10 St
COMPOSITION EFFICIENCY 85 %
CALCULATION RESULT
THE NUMBER OF STATIONS 10 St
PITCH TIME (tp) 1396.66 RU
ASSIGN WORK
END
32710
32710a1
32710a2
32710a3
32710b1
32710b2
32710b3
32710c
32710d
32720
32720a
32720b
32720c1
32720c2
32720d
32720e
32706
32709
32707
32708

FIG. 125

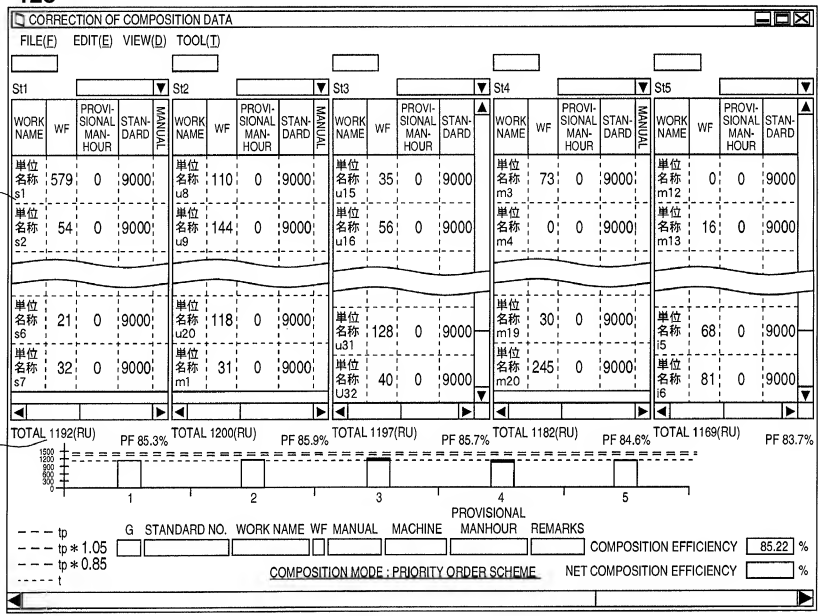

CORRECTION OF COMPOSITION DATA
FILE(F) EDIT(E) VIEW(D) TOOL(T)
28001
St1
St2
St3
St4
St5
WORK NAME
WF
PROVISIONAL MAN-HOUR
STAN-DARD
MANUAL
単位名称 s1 579 0 9000
単位名称 s2 54 0 9000
単位名称 s6 21 0 9000
単位名称 s7 32 0 9000
単位名称 u8 110 0 9000
単位名称 u9 144 0 9000
単位名称 u20 118 0 9000
単位名称 m1 31 0 9000
単位名称 u15 35 0 9000
単位名称 u16 56 0 9000
単位名称 u31 128 0 9000
単位名称 U32 40 0 9000
単位名称 m3 73 0 9000
単位名称 m4 0 0 9000
単位名称 m19 30 0 9000
単位名称 m20 245 0 9000
単位名称 m12 0 0 9000
単位名称 m13 16 0 9000
単位名称 i5 68 0 9000
単位名称 i6 81 0 9000
28002
TOTAL 1192(RU)
PF 85.3%
TOTAL 1200(RU)
PF 85.9%
TOTAL 1197(RU)
PF 85.7%
TOTAL 1182(RU)
PF 84.6%
TOTAL 1169(RU)
PF 83.7%
1500
1200
900
600
300
0
1
2
3
4
5
PROVISIONAL MANHOUR
tp
tp * 1.05
tp * 0.85
t
G STANDARD NO. WORK NAME WF MANUAL MACHINE REMARKS
COMPOSITION EFFICIENCY 85.22 %
COMPOSITION MODE : PRIORITY ORDER SCHEME
NET COMPOSITION EFFICIENCY %

FIG. 126

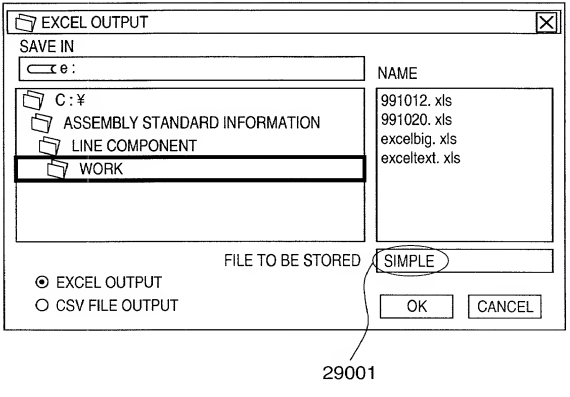

EXCEL OUTPUT
SAVE IN
e:
C:¥
ASSEMBLY STANDARD INFORMATION
LINE COMPONENT
WORK
NAME
991012. xls
991020. xls
excelbig. xls
exceltext. xls
FILE TO BE STORED
SIMPLE
EXCEL OUTPUT
CSV FILE OUTPUT
OK
CANCEL
29001

FIG. 127

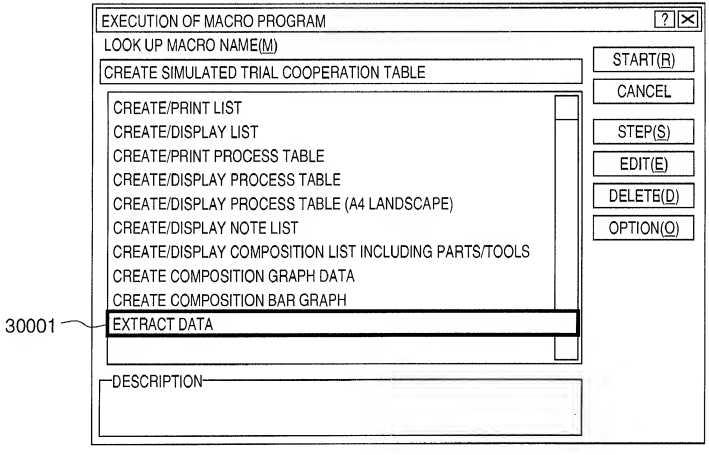

EXECUTION OF MACRO PROGRAM
LOOK UP MACRO NAME(M)
CREATE SIMULATED TRIAL COOPERATION TABLE
START(R)
CANCEL
STEP(S)
EDIT(E)
DELETE(D)
OPTION(O)
CREATE/PRINT LIST
CREATE/DISPLAY LIST
CREATE/PRINT PROCESS TABLE
CREATE/DISPLAY PROCESS TABLE
CREATE/DISPLAY PROCESS TABLE (A4 LANDSCAPE)
CREATE/DISPLAY NOTE LIST
CREATE/DISPLAY COMPOSITION LIST INCLUDING PARTS/TOOLS
CREATE COMPOSITION GRAPH DATA
CREATE COMPOSITION BAR GRAPH
30001
EXTRACT DATA
DESCRIPTION

FIG. 128

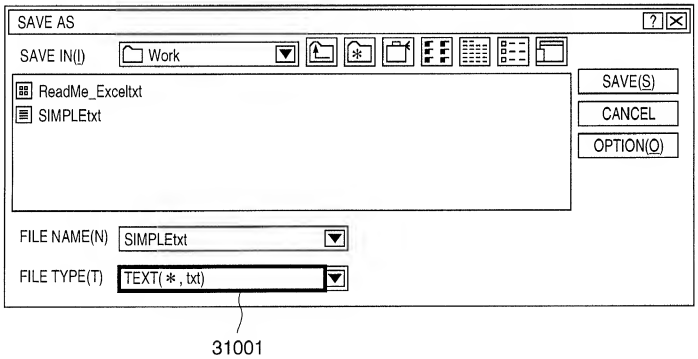

SAVE AS
SAVE IN(I)
Work
ReadMe_Exceltxt
SIMPLEtxt
SAVE(S)
CANCEL
OPTION(O)
FILE NAME(N)
SIMPLEtxt
FILE TYPE(T)
TEXT(*, txt)
31001

FIG. 129

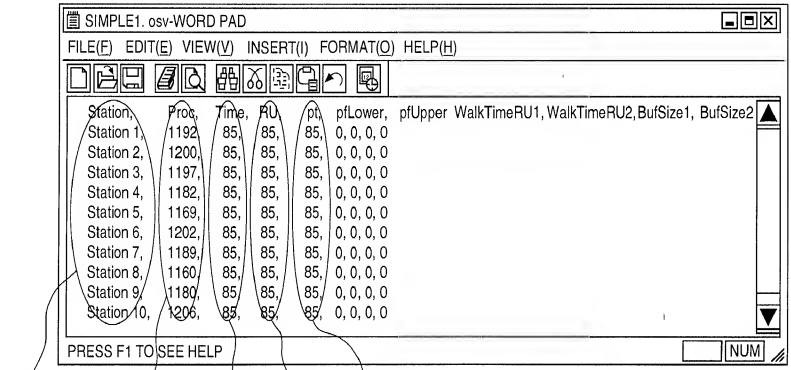

SIMPLE1. osv-WORD PAD
FILE(F) EDIT(E) VIEW(V) INSERT(I) FORMAT(O) HELP(H)
Station, Proc, Time, RU, pt, pfLower, pfUpper WalkTimeRU1, WalkTimeRU2, BufSize1, BufSize2
Station 1, 1192, 85, 85, 85, 0, 0, 0, 0
Station 2, 1200, 85, 85, 85, 0, 0, 0, 0
Station 3, 1197, 85, 85, 85, 0, 0, 0, 0
Station 4, 1182, 85, 85, 85, 0, 0, 0, 0
Station 5, 1169, 85, 85, 85, 0, 0, 0, 0
Station 6, 1202, 85, 85, 85, 0, 0, 0, 0
Station 7, 1189, 85, 85, 85, 0, 0, 0, 0
Station 8, 1160, 85, 85, 85, 0, 0, 0, 0
Station 9, 1180, 85, 85, 85, 0, 0, 0, 0
Station 10, 1206, 85, 85, 85, 0, 0, 0, 0
PRESS F1 TO SEE HELP
NUM
32001
32002
32003
32004
32005

FIG. 130

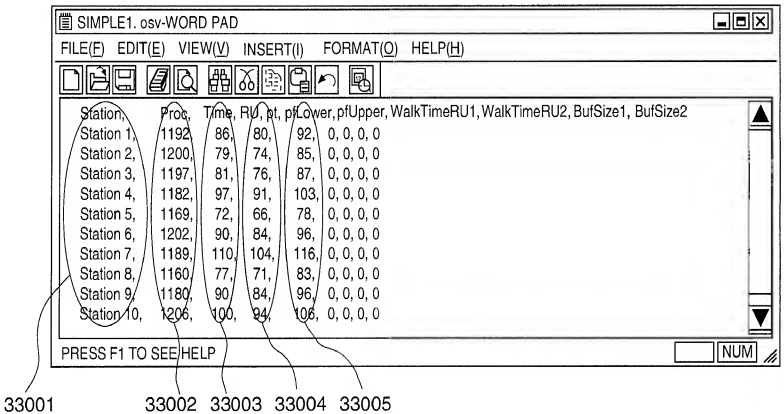

SIMPLE1. osv-WORD PAD
FILE(F) EDIT(E) VIEW(V) INSERT(I) FORMAT(O) HELP(H)
Station, Proc, Time, RU, pt, pfLower, pfUpper, WalkTimeRU1, WalkTimeRU2, BufSize1, BufSize2
Station 1, 1192, 86, 80, 92, 0, 0, 0, 0
Station 2, 1200, 79, 74, 85, 0, 0, 0, 0
Station 3, 1197, 81, 76, 87, 0, 0, 0, 0
Station 4, 1182, 97, 91, 103, 0, 0, 0, 0
Station 5, 1169, 72, 66, 78, 0, 0, 0, 0
Station 6, 1202, 90, 84, 96, 0, 0, 0, 0
Station 7, 1189, 110, 104, 116, 0, 0, 0, 0
Station 8, 1160, 77, 71, 83, 0, 0, 0, 0
Station 9, 1180, 90, 84, 96, 0, 0, 0, 0
Station 10, 1206, 100, 94, 106, 0, 0, 0, 0
PRESS F1 TO SEE HELP
NUM
33001
33002
33003
33004
33005

FIG. 131

		FIRST MONTH	SECOND MONTH	THIRD MONTH	FROM FOURTH MONTH
34001	THE EXPECTED NUMBER OF PRODUCTS (UI)	72 UNITS	120 UNITS	168 UNITS	240 UNITS
34002	EXPECTED NONADJUSTED RATIO (a) (THE NUMBER U2 OF DEFECTIVE PRODUCTS)	70% 31 UNITS	80% 30 UNITS	90% 191 UNITS	99.9% 0 UNITS
34003	NUMBER OF INITIAL PRODUCTS INVESTED INTO TOP OF ASSEMBLY LINE (U)	103 UNITS	150 UNITS	187 UNITS	240 UNITS
34004	EXPECTED STOP TIME (HI) (LOSS RATIO (F%))	60 MIN (14%)	50 MIN (12%)	45 MIN (10%)	0 MIN (14%)
34005	EXPECTED COMPOSITION EFFICIENCY (E)	60% (50%~70%)	75% (70%~80%)	85% (80%~95%)	60% (95%~95%)
34006	EXPECTED PRODUCTION RATIO (E)	30%	50%	70%	100%

COMPOSITION CONDITIONS FOR FIRST MONTH (EXPECTED NONADJUSTED RATIO 70%, EXPECTED STOP TIME 60 MIN, AND EXPECTED COMPOSITION EFFICIENCY 50%)

FIG. 132

INPUT OF COMPOSITION DATA

FILE(F) EDIT(E) TOOL(T) **CHANGE WORK ORDER(M)** OPTION(O)

COMPOSITION DATA

TARGET MODEL: PER1000 | FILE NAME (COMPOSITION NAME): PERFORMANCE COOPERATION | REVISION NUMBER: 01 | G: | ◉WORK ○TOOL ○PART ○NOTE | COMPOSITION MODE | PRIORITY ORDER SCHEME

GNO.	STANDARD NO.	WORK NAME	WF	MANUAL	MACHINE	PROVISIONAL MANHOUR	SECTION COMPONENT	REMARKS

WORK STANDARD NO.

G	SERIAL NO.	WORK STANDARD NO.	WORK NAME	WF MANHOUR	MANUAL MANHOUR	MACHINE MANHOUR	COMPONENT NAME	NODE NO.	PREVIOUS
1	1	900000000000001E	単位名称s1	579	579	0	セット	1	
1	2	900000000000002E	単位名称s2	54	54	0	セット	2	1
1	3	900000000000003E	単位名称s3	10	10	0	セット	3	2
1	4	900000000000004E	単位名称s4	50	50	0	セット	4	3
	5	900000000000005E	単位名称u1	63	63	0	ユニット	5	4
	6	900000000000006E	単位名称u2	30	30	0	ユニット	6	4
	7	900000000000007E	単位名称u3	156	156	0	ユニット	7	6
	8	900000000000008E	単位名称u4	35	35	0	ユニット	8	4
	9	900000000000009E	単位名称u5	162	162	0	ユニット	9	8
	27	90000000000027E	単位名称u23	55	55	0	ユニット	27	22
	28	90000000000028E	単位名称u24	86	86	0	ユニット	28	27
	29	90000000000029E	単位名称u25	147	147	0	ユニット	29	4
	30	9000000000002AE	単位名称u26	52	52	0	ユニット	30	26
	31	9000000000002BE	単位名称u27	55	55	0	ユニット	31	30
	32	9000000000002CE	単位名称u28	203	203	0	ユニット	32	28
	33	9000000000002DE	単位名称u29	66	66	0	ユニット	33	31
	34	9000000000002EE	単位名称u30	36	36	0	ユニット	34	33

THE NUMBER OF WORKS IN COMPOSITION: 141 TOTAL: 11903 (RU)

TOTAL MANHOUR IN COMPOSITION: 11903 (RU) TOTAL MANHOUR OUTSIDE WORKSHOP: 0 (RU)

TOTAL MANHOUR OUTSIDE COMPOSITION: 0 (RU)

INPUT DATA

THE EXPECTED NUMBER OF PRODUCTS:	72	UNITS
THE NUMBER OF DEFECTIVE PRODUCTS:	31	UNITS
THE NUMBER OF INITIAL PRODUCTS INVESTED INTO TOP OF ASSEMBLY LINE:	103	UNITS
WORKING TIME:	450	MIN
BREAK TIME:	15	MIN
MORNING MEETING TIME:	1	MIN
EXERCISE TIME:	5	MIN
LINE STOP TIME:	60	MIN
OTHERS:	0	MIN
OPERATION TIME:	360	MIN
EXPECTED COMPOSITION EFFICIENCY:	50	%

CALCULATE

OUTPUT DATA

STATION (ROUND DOWN)	6	St
COMPOSITION EFFICIENCY	55	%
STATION (ROUND UP)	7	St
COMPOSITION EFFICIENCY	47	%
THE NUMBER OF STATIONS	7	St
COMPOSITION EFFICIENCY	47	%

CALCULATION RESULT

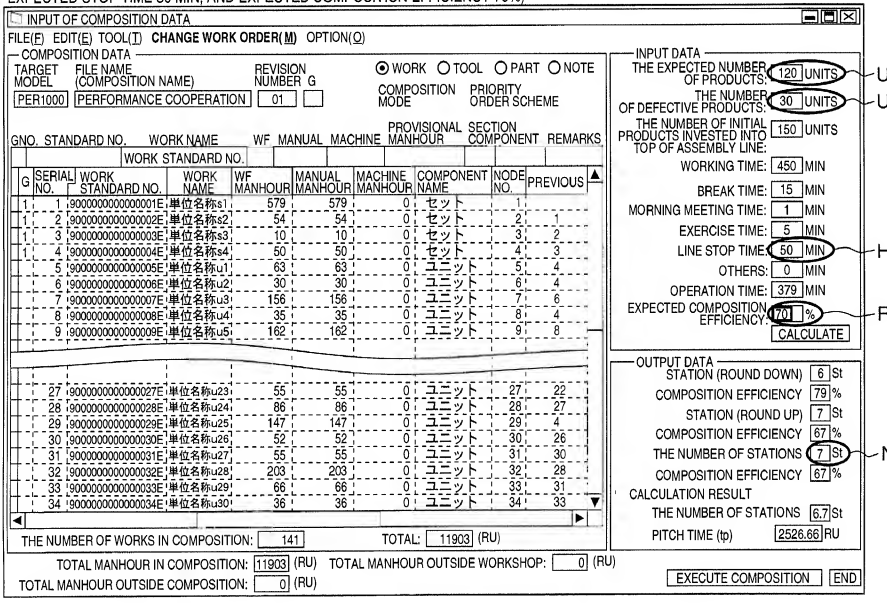
THE NUMBER OF STATIONS	6.6	St
PITCH TIME (tp)	3582.52	RU

EXECUTE COMPOSITION END

U1 U2 HI R0 NST

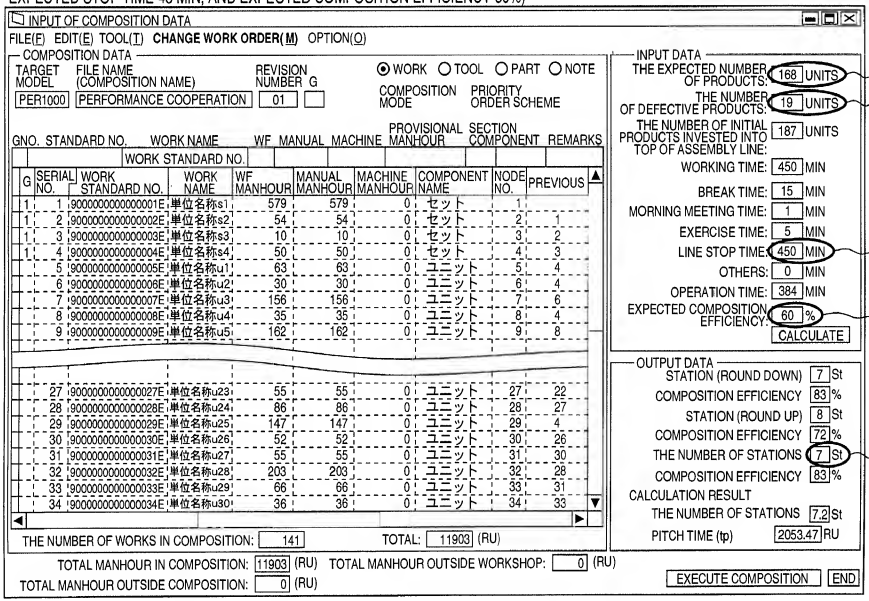
COMPOSITION CONDITIONS FOR SECOND MONTH (EXPECTED NONADJUSTED RATIO 80%, EXPECTED STOP TIME 50 MIN, AND EXPECTED COMPOSITION EFFICIENCY 70%)

FIG. 133



COMPOSITION CONDITIONS FOR THIRD MONTH (EXPECTED NONADJUSTED RATIO 90%, EXPECTED STOP TIME 45 MIN, AND EXPECTED COMPOSITION EFFICIENCY 80%)

FIG. 134



COMPOSITION CONDITIONS FOR FOURTH FOURTH (EXPECTED NONADJUSTED RATIO 100%, EXPECTED STOP TIME 0 MIN, AND EXPECTED COMPOSITION EFFICIENCY 95%)

FIG. 135

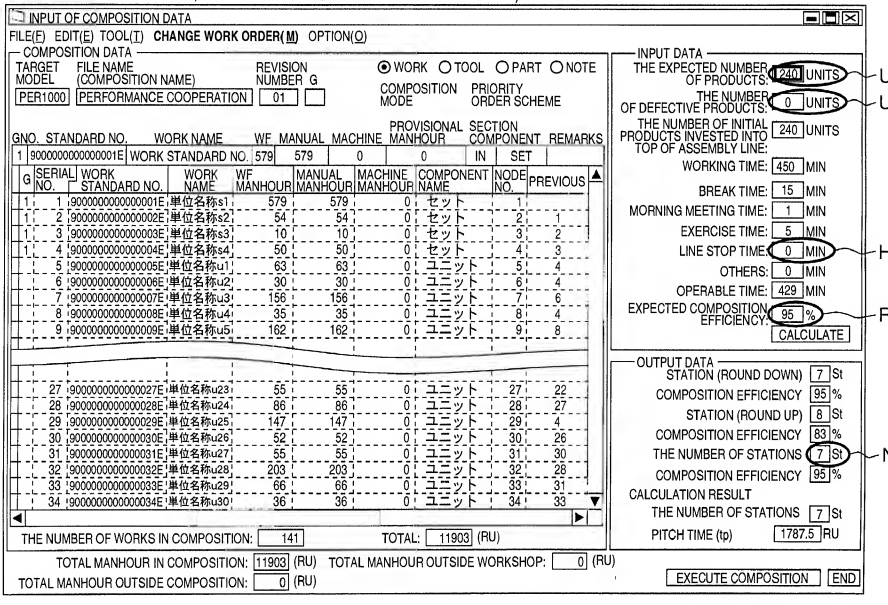


FIG. 136

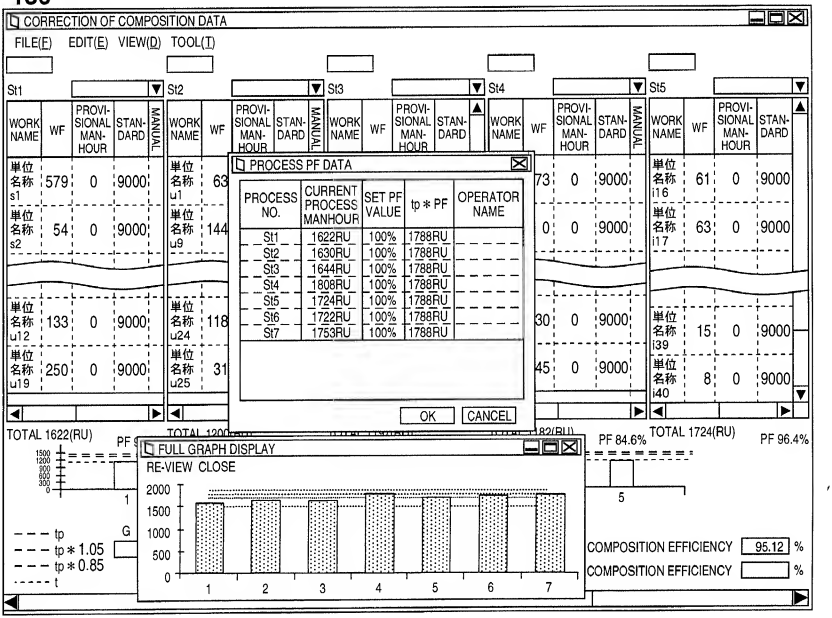

CORRECTION OF COMPOSITION DATA
FILE(F) EDIT(E) VIEW(D) TOOL(T)
St1
St2
St3
St4
St5
WORK NAME
WF
PROVISIONAL MAN-HOUR
STAN-DARD
MANUAL
PROCESS PF DATA
PROCESS NO.
CURRENT PROCESS MANHOUR
SET PF VALUE
tp * PF
OPERATOR NAME
St1 1622RU 100% 1788RU
St2 1630RU 100% 1788RU
St3 1644RU 100% 1788RU
St4 1808RU 100% 1788RU
St5 1724RU 100% 1788RU
St6 1722RU 100% 1788RU
St7 1753RU 100% 1788RU
OK
CANCEL
TOTAL 1622(RU)
PF
TOTAL 1724(RU)
PF 84.6%
PF 96.4%
FULL GRAPH DISPLAY
RE-VIEW CLOSE
tp
tp * 1.05
tp * 0.85
t
G
COMPOSITION EFFICIENCY 95.12 %
COMPOSITION EFFICIENCY %

FIG. 137

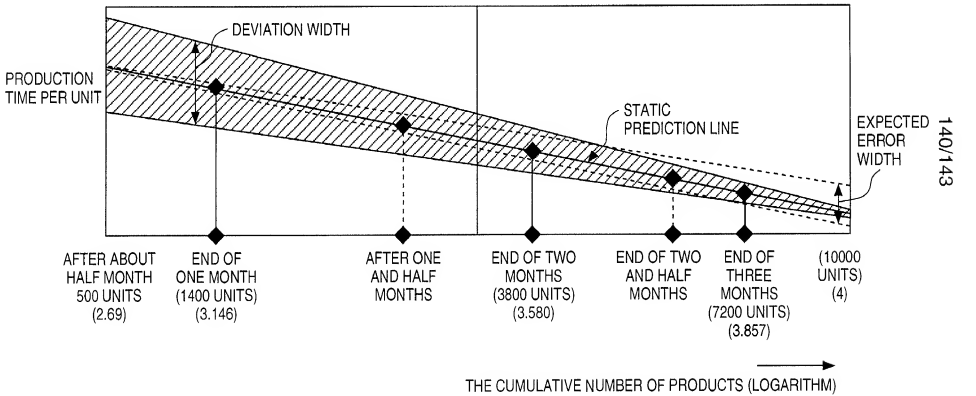

DEVIATION WIDTH
PRODUCTION TIME PER UNIT
STATIC PREDICTION LINE
EXPECTED ERROR WIDTH
AFTER ABOUT HALF MONTH 500 UNITS (2.69)
END OF ONE MONTH (1400 UNITS) (3.146)
AFTER ONE AND HALF MONTHS
END OF TWO MONTHS (3800 UNITS) (3.580)
END OF TWO AND HALF MONTHS
END OF THREE MONTHS (7200 UNITS) (3.857)
(10000 UNITS) (4)
THE CUMULATIVE NUMBER OF PRODUCTS (LOGARITHM)

FIG. 138

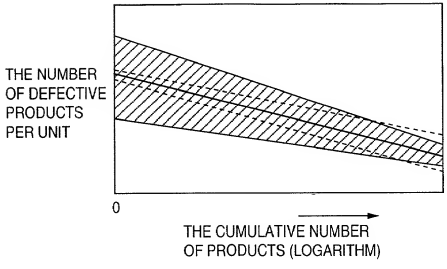

THE NUMBER
OF DEFECTIVE
PRODUCTS
PER UNIT
0
THE CUMULATIVE NUMBER
OF PRODUCTS (LOGARITHM)

FIG. 139

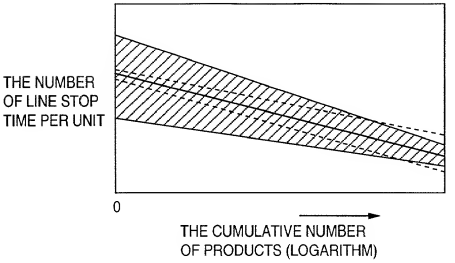
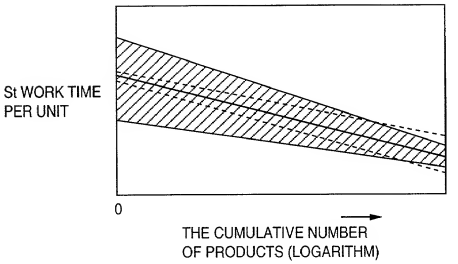

THE NUMBER
OF LINE STOP
TIME PER UNIT
0
THE CUMULATIVE NUMBER
OF PRODUCTS (LOGARITHM)

FIG. 140


St WORK TIME
PER UNIT
0
THE CUMULATIVE NUMBER
OF PRODUCTS (LOGARITHM)